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MILLION DOLLAR MOWERS

Artificial vs. natural turf

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Butler National GC
Oak Brook, Illinois

Seventh fairway during the Western Open, 1989.

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After two years, Penneagle produces a good working layer with no thatch buildup.

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LM Editorial Staff

Jerry Roche
Exec. Editor

Will Perry
Mg. Editor

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Assoc. Editor

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Ithaca, NY

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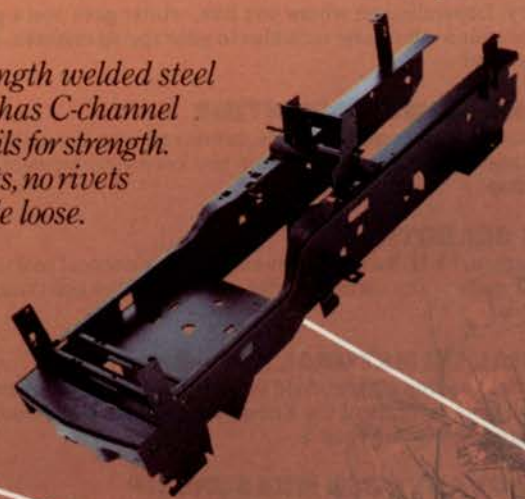

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AS I SEE IT...

Fore-warned is fore-armed in the spring

March has been "in like a lion and out like a lamb," and April showers now promise to "bring May flowers"—as the old sayings go.

But for landscape managers in the northern sections of the country, this month also usually brings some pretty intense migraines. April, traditionally, is either the launching pad for a successful year, or the month that gums up production schedules for the rest of the summer.

You've had all winter to get your ducks in a row, to organize your books, to make those extra off-season calls to clients, to find good seasonal help, to spit-polish the machinery. But this is the month Mother Nature blows the whistle, for better or for worse. (And, for some strange reason lately, it seems for the worse.)

"Spring concerns haven't changed over the years," observes John Buechner of Lawn Doctor, Matawan, N.J.

Thus, April is the month the groundwork is laid for employee burnout, customer complaints and equipment breakdown. And nothing can be done about it. Or can it?

"If you have a plan, it makes things easier," notes Buechner, who has been through enough springs to know the drill by heart. "Anticipation is the key. In the off-season, you should examine all the problems of the previous year, evaluate them and have a plan to deal with them this year. And you should also have a Plan B or C to fall back on."

For instance, Buechner told Lawn Doctor franchisees a couple of months ago, history has shown 14 scheduled application days are lost each spring to weather. If the astute landscaper or lawn care operator can back up his schedule a little extra, some of those days can automatically be reclaimed.

"This is not earth-shattering information," Buechner admits. "You can take any business and apply the same principles."

The point is that—as another old saying goes—"fore-warned is fore-armed." And landscape managers should need no fore-warning other than last year's experiences and a little advance planning to fore-arm them.

Jerry Roche

Jerry Roche, executive editor

LM

EDITORIAL STAFF

Jerry Roche, Executive Editor
Will Perry, Managing Editor
Terry McIver, Associate Editor
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100
FAX (216) 826-2832

MARKETING STAFF

Dick Gore, Publisher
Office: 3475 Lenox Rd. N.E.
Suite 665
Atlanta, GA 30326
(404) 233-1817
FAX (404) 261-7022

Jon Miducki, National Sales Manager
Marsha Dover, Midwest Sales Manager
Bob Earley, Group Vice President
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100
FAX (216) 826-2832

Robert Mierow, W. Coast Representative
Office: 1515 NW 51st Street
Seattle, WA 98107
(206) 783-0549
FAX (206) 784-5545

Tom Greney, Senior Vice-President
Office: 111 East Wacker Drive
Chicago, IL 60601
(312) 938-2317
FAX (312) 938-4850

SUPPORT STAFF

Carol Peterson, Production Mgr.
Connie Freeland, Prod. Supervisor
Lynn Williams, Graphic Design
Jackie Eisenmann, Circulation Super.
Bonnie DeFoe, Directory Coordinator
Gail Parenteau, Reader Service Mgr.
Office: 120 West Second St.
Duluth, MN 55802
(218) 723-9200
FAX (218) 723-9223

David Komitau, Graphics Coordinator
Ted Matthews, Promotion Director
Office: 7500 Old Oak Blvd.
Cleveland, OH 44130
(216) 243-8100

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Robert L. Edgell, Chairman; Richard Moeller, President; Lars Fladmark, Executive Vice President; Arland Hirman, Vice President/Treasurer; Thomas Greney, Senior Vice President; Ezra Pincus, Senior Vice President; Joe Bilderbach, Vice President; James Gherna, Vice President; George Glenn, Vice President; Harry Ramaley, Vice President.

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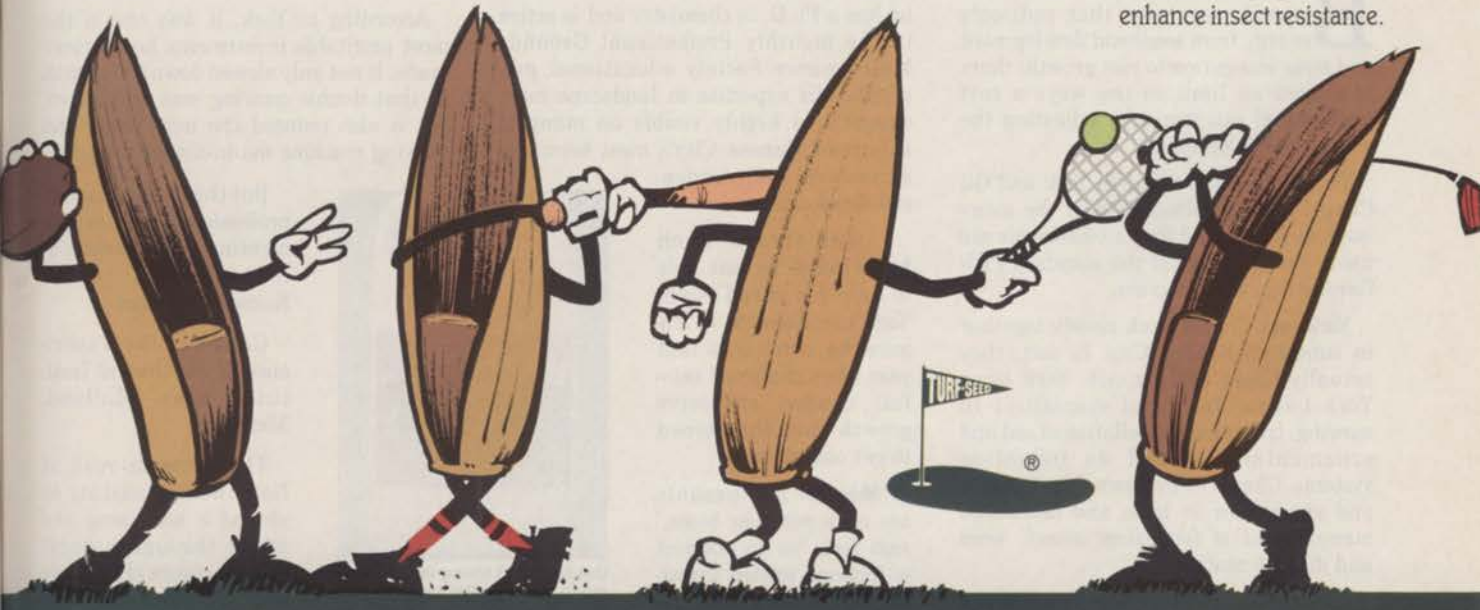

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Bayard Sheldon, left, president of Silver Creek Landscaping in Sacramento, says that they use Embark as an edger and trimmer to keep Bermuda from creeping into flower beds or growing ragged around tree wells and fence lines, as well as encroaching on sidewalks, driveways and walls. Center is Nick Subia, general manager of the maintenance division; and, right, is Charles Sheldon, Silver Creek vice president.

Robert McKindles, supervisor of grounds maintenance at Northwood Institute near Midland, Michigan wanted his entrance road to have a manicured look comparable to the ornamental turf on the main campus. He used two treatments of the PBI/Gordon fine turf program, the first in early spring, and the second in midsummer. "The roadsides were only mowed twice," says McKindles, "and the color was as beautiful as any turf on the campus."

If you mow or manage ornamental turf, Embark® PLANT GROWTH REGULATOR can help in many ways:

All over America, professionals are experimenting with ways to improve their business with Embark® Plant Growth Regulator. Read how four landscapers with totally different goals are more successful because of the way they use Embark.

Everett Mealman, President
PBI/Gordon Corporation

Because Embark is a true plant growth regulator that redirects energy from seedhead development and stem elongation to root growth, there is almost no limit to the ways a turf professional can use it by adjusting the rate to fit the problem.

The experiences of Kevin York and Gil Chapel are one illustration of the many ways we have found that professionals are using Embark beyond the standard PBI/Gordon fine turf program.

York and Chapel work closely together in suburban Kansas City. In fact, they actually share office space. York owns York Lawns, Inc., and specializes in mowing, trimming, installation of sod and ornamentals as well as irrigation systems. Chapel owns Lawn Pro of Olathe and specializes in lawn and landscape management of fertilizing, insect, weed and disease control.

Chapel has very carefully followed the development of PGRs since they first came on the scene. Little wonder, since he has a Ph.D. in chemistry and is active in the monthly Professional Grounds Maintenance Society educational programs. His expertise in landscape management is highly visible on many of suburban Kansas City's most beautiful commercial and residential developments.

...**and from such knowledge** he was able to help his friend Kevin York use Embark in his mowing contracts last year when abnormal rainfall caused excessive growth that threatened to get out of hand.

"Most of my accounts are on a per-mow basis," says York, "so my mindset is inclined toward investing in mowing machine maintenance and employee training rather than buying chemicals to reduce growth. But I was willing to try anything that would help me keep up with the avalanche of growth and scheduling problems caused by all the rain."

And thus it was that Chapel applied a low rate of Embark and Limit® on several of the properties York was mowing — to slow down the growth. (A ½ rate of Embark alone may also achieve this at a cost of about $11.00/A.)

According to York, it was one of the most profitable investments he has ever made. It not only slowed down the growth so that double mowing was eliminated, but it also reduced the man hours and mowing machine maintenance per acre.

Use rates and timing vary according to geographical area and with weather conditions, as well as with turf species.

But this is just one way professionals are experimenting with low rates of Embark PGR in the Kansas City area.

Consider the experience of Northwood Institute, near Midland, Michigan.

The entrance road at Northwood Institute is almost a mile long and winds through natural ground covers of majestic oaks and pines. The berm tapers off into a ditch on

each side that is well turfed but extremely difficult to mow.

Because the entrance road is such a vital element of the overall campus image, the Institute wants it to have a manicured look rather than your conventional highway look.

After considering all of the alternatives, Robert McKindles, supervisor of grounds maintenance at Northwood Institute, elected to treat the roadside with the fine-turf rate of Embark in a tank-mix with Ferromec® AC Liquid Iron — one pint of Embark plus 2.75 gallons of Ferromec AC per acre.

"The first treatment went down in early spring," says McKindles, "and it held the grass in a neat, attractive condition for six to seven weeks. Ten weeks after the first application went down, the roadsides were mowed and a second application went down.

"It held the growth sufficiently that only one more mowing was needed," continues McKindles, "and the color was as beautiful as any of the turf on the entire campus."

While use rates and timing may vary in other geographical areas and with weather conditions, Embark proved an invaluable tool at Northwood Institute.

Embark is also a priceless tool for edging and trimming. Just ask the folks at Silver Creek Landscape in Sacramento, California.

Sacramento has to be the ground cover capital of the world. At least 50% of the landscape consists of creative placement of rocks, bark, ivy, and a wide variety of trees.

Kevin York, left, owner of York Lawns, Inc. and Gil Chapel, right, owner of Lawn Pro, show Everett Mealman one of the commercial properties where they slowed down the growth of the grass. "Using Embark to reduce the man hours per acre for mowing is an idea whose time has come for mowing contractors," says York.

"We use Embark as an edger and trimmer," says Bayard Sheldon, president of Silver Creek Landscape, headquartered in the suburban Rancho Cordova area of Sacramento. "Sometimes I think we should call ourselves *manicurists*," laughs Sheldon, "because it seems that so much of our effort revolves around keeping Bermuda from creeping into flower beds or growing ragged around tree wells and fence lines, as well as keeping our ivy ground cover from encroaching on sidewalks and driveways and climbing up the sides of buildings. I don't know how we could keep up with it without the use of Embark to keep everything in its place.

The standard program for using Embark on irrigated fine turf

If Embark is a tool with virtually endless applications in landscaping, the standard Embark/Ferromec AC/Trimec® Herbicide program for fine turf is surely becoming the most significant development in recent years for reducing mowing costs, while at the same time brightening up the color of turf and strengthening its root system.

Ferromec AC, because of its patented nitrogen-iron bonding process, works within 48 hours to fix the color. The Embark kicks in later with its task of suppressing the growth rate of the turf by redirecting the energy from seedhead development and stem elongation to root development.

The Embark/Ferromec AC treatment costs about $42.00 per acre for the chemical and, since it is applied with a regular herbicide treatment of Trimec, it gets a free ride as far as cost of application is concerned.

The program will save two to four mowings during a seven- to eight-week period and, since the cost of mowing is known to be at least $45.00 per acre, the savings can be as much as $135 per acre per treatment.

Shouldn't you try Embark?

The evidence is clear that Embark is changing the economics of turf management. As with any PGR, application rates and timing, as well as the condition of the turf and weather, are vital to successful use. To learn more about Embark PGR call our Sales Service Group. Ask for a free copy of the Embark PGR Professional Vegetation Management Applicator's Guide.

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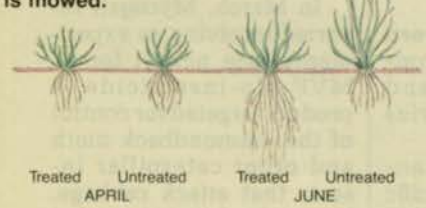

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GREEN INDUSTRY NEWS

LANDSCAPE MANAGEMENT

APRIL 1990, VOLUME 29, NUMBER 3

PRODUCTS

Toro unveils unique new greens aeration equipment

ORLANDO, Fla. — The Toro Co. introduced a revolutionary aerator that uses high velocity water to aerate putting surfaces.

The HydroJect 3000 "has the potential to cause significant change in the way cultural aeration practices are performed by superintendents today," says Mike Hoffman, director of commercial marketing. The aerator delivers water at 5000 psi to penetrate deeper into the soil than conventional hollow tine aerators with less injury to the plant and root, without disturbing the playing surface.

"The key is that play does not have to be interrupted," adds Hoffman. "In the past, aeration was generally limited to spring and fall application...because the HydroJect 3000 does not disturb the surface, you no longer have the problem of mixing golfers with aeration. Now both can occur on the same day."

The HydroJect is capable of reaching depths of four to eight inches with a single shot of water and depths of beyond 20 inches if multiple shots are used. The aerator uses about 150 gallons of water to aerate a 7,000 sq. ft. green. It has an aeration width of 33 inches, with 11 nozzles spaced every three inches. It is powered by an Onan four-cycle, air-cooled, 24-hp engine capable of four hours of operation without refueling. □

The Toro Company's new HydroJect 3000 (seen here) "has the potential to cause significant change in the way cultural aeration practices are performed by superintendents today."

RESEARCH

Company buys bio product

SAN DIEGO, Calif. — Mycogen Corp. recently acquired the patent rights from Michigan State University for development of a biological control product for *Poa annua* (annual bluegrass).

The bacteria is called *Xanthomonas campestris*. Paul Zorner, director of bioherbicide research, says, however, that the pathogen has not yet been identified.

"We have all of our permits submitted to the federal government and to each state where we want to release the organism," says Zorner. The company plans a 10-state/13-site field testing program.

Current testing has been conducted in the company's San Diego and Ruston, La. laboratories and greenhouses.

Zorner says the xanthomonas is "very specific to annual bluegrass. Very few other species of plants are susceptible to this particular disease. That's the idea of bio weed control; it's very, very specific."

Zorner says that if all goes well, Mycogen would consider obtaining an experimental use permit next year, which would allow it to treat several acres of poa-infested turf.

In March, Mycogen reported receiving an experimental use permit for its MVP bio-insecticide, a product targeted for control of the diamondback moth and other caterpillar insects that attack cabbage, broccoli, lettuce and a range of other crops.

Based in San Diego, Mycogen also markets M-One insecticide, a *Bacillus thuringiensis* product for control of Colorado potato beetle larvae.

In January 1990 Mycogen purchased the Commercial and Agricultural Products Divisions of Safer, Inc. for $2.25 million. □

RESEARCH

Bermuda first over bentgrass in South

ORLANDO, Fla. — The stresses faced by creeping bentgrass in the deep South are simply too overwhelming to make it the turf of choice there, according to Dr. James Beard of Texas A&M University.

"I think you can have some success initially," says Beard of southern creeping bentgrass greens, "but really the bottom line is what happens in that fourth, fifth, and sixth year. I think it's an awfully, awfully difficult thing to accomplish."

Beard says, "We must keep in mind that one is a warm-season species and one is a cool-season species, and that is a big difference in many, many different ways."

Florida is about as far away from the traditional adaptation zone for bentgrass as one can go, notes Beard. "And that's a big distance to overcome in terms of all the changes in environments and differences that exist in that distance." These include different metabolism, root systems, tolerances, cultural, irrigation and temperature requirements.

The farther you go away from the adaptation zone, says Beard, the more difficult it is to grow bentgrass. As a result, additional pressure exists for cultural practices to be successful.

"So, in a given situation, depending on environmental stresses or whatever stresses you have relative to temperature, this can affect the potential success you may have, because of the great disparity in stress tolerance between these two grasses."

Beard says the extension of bentgrass into the deep South so far is "really amazing, considering its normal range of application," but concluded, "I never want to say it can't be done or won't be done in the future...but at this date and time and level of technology, I wonder whether it's really a wise way to go.

"I know there are great pressures out there to get away (from bermuda), but sometimes some people need to have some common sense talked into them."

Beard made his comments at the 61st annual Golf Course Superintendents Association of America meeting recently. □

	CREEPING BENTGRASS	BERMUDAGRASS
Heat tolerance	Fair	Superior
Summer rooting	Fair	Good
Wilt-stress tolerance	Poor	Superior
Drought Resistance	Fair	Superior
Wear tolerance	Fair	Excellent
TEMPERATURE DIFFERENCES:		
Optimum temp.	60° to 70°	80° to 95°
Sub-optimal growth at	45° to 60°	65° to 70°
Root growth	50° to 60°	75° to 85°
Shoot growth	60° to 75°	80° to 95°
Shoot restriction	75° to 90°	95° to 100°
Root growth cessation	80°	105°
Death	105°	120°

RESEARCH

Support for bio-controls is meeting resistance in Europe

LONDON, England — Reuters News Service recently reported hostility toward biological research in the United Kingdom and West Germany. According to the report, genetic engineering firms are moving overseas to escape the red tape and hostility.

The regulatory environment in Europe is hindering bio research, and companies are going where they can proceed with minimal interference.

"Research will follow wherever the manufacturing and market is, and increasingly the manufacturing and markets are overseas," says Nigel Poole, manager of bio-technology and regulatory affairs for Britain's Imperial Chemical Industries.

In West Germany, opposition is based on fear of the unknown, long-term implications of genetically altering a cell, fearing that organisms which have been tampered with in labs could run rampant when released into the environment.

Bayer AG and BASF AG, two large West German chemical companies, have moved their bio-technology research operations to the U.S.

Hoechst AG is reported to be following close behind in the migration to friendly shores. A West German court recently blocked it from making genetically engineered human insulin.

The court decision means that no bio-engineered products can be produced in West Germany. But sources say moving operations to foreign soil will not automatically make it easier to sell biological products back home. □

RESEARCH

Pesticides pose no threat to groundwater

Dr. Harry Niemczyk: people need confidence in lawn care operators.

WOOSTER, Ohio — Scientists at The Ohio State University have found that there is little or no downward movement of pesticides applied to lawns and golf courses.

Dr. Harry Niemczyk and Adam A. Krause say the findings could help allay concern that lawn care chemicals are leaching into the soil and contaminating groundwater.

"Whether on 'Geraldo' or on '60 Minutes,' people have been saying that pesticides applied to turfgrasses are getting into the groundwater," says Niemczyk. "Our data says that's just not true."

Niemczyk and Krause applied six herbicides and nine insecticides to turfgrasses in separate, one-year experiments. He says that almost all pesticide residues remained in thatch, and that there was little or no leaching of pesticides in their their field studies. (Runoff or homeowner exposure to lawn care chemicals were

continued on page 12

GCSAA show attendance soars to a record 17,500

LAWRENCE, Kan. — Attendance at the GCSAA International Golf Course Conference and Show reached a record high of 17,500, a 20 percent increase over 1989 attendance.

GCSAA director of communications Pat Jones cited the increased popularity of golf and the show's Orlando, Fla., location as two keys to the high attendance figures.

"There's so much interest in the business because it's crucial to the Florida economy," says Jones. "There was also increased interest from golf course owners, operators and architects. That doesn't represent a huge number, but we're glad to see it."

The GCSAA estimates attendance from 25 European, Canadian and Pacific rim countries at 1500. Ideally, says Jones, foreign interest will increase each year. "We're certainly hoping," says Jones, "that with continued developments in Eastern and Western Europe through 1992 that golf is going to find a bigger place in Europe."

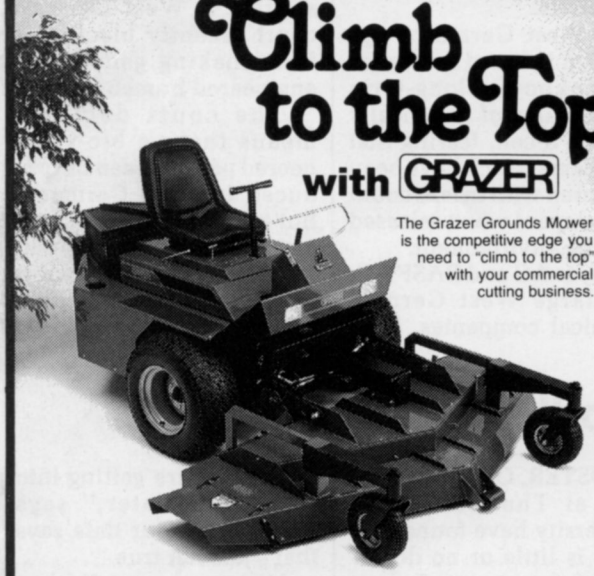
Jones reports that the show's 552 exhibitors were thrilled with the higher traffic on the show floor, and superintendents expressed delight with the Orlando area and the way the show was set up.

"We were more specific in the educational programs," he notes. "In the past we've offered the opportunity to go from very general turfgrass maintenance classes to more specific classes. This year, with the addition of some of the environmental topics that we discussed and some of the very technical and specific regulatory issues they face, we were able to offer them some very detailed information that wasn't available in the past."

Jones says improvements and changes in next year's Las Vegas conference will be based on member surveys.

"We will continue to offer as many duplicate sessions as we can," Jones promises. □

Climb to the Top with GRAZER



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Circle No. 143 on Reader Inquiry Card

GOLF

Very possible to 'max out' on green speeds, super says

PALM DESERT, Calif. — The extra maintenance required to maintain the fastest putting green speed possible has narrowed the margin between green survival and failure, says Bob Stuczynski, superintendent at Ironwood Country Club here.

As Stuczynski says—and as most supers would concur—closer mowing causes shorter roots and increased summer soil temperatures. The thinner turfgrass stand also encourages more weed problems, which lead to more herbicide use.

NIEMCZYK *from page 11*
not examined.)

"I hope that people will have confidence that what they're doing to lawns is not contributing to groundwater contamination," concludes Niemczyk. □

Stuczynski finds that some superintendents are inclined to omit the green's minimal nitrogen needs rather than anger golfers. "The major problems with low nitrogen," explains Stuczynski, "are more weeds and moss and more blemishes which heal slowly. Without new growth that can be mowed into a smooth surface, the demand for closer cut increases."

Stuczynski thinks the key is that players must realize what can and cannot be done.

"The golf course superintendent is willing to provide whatever the golfer likes," says Stuczynski, "if it is feasible without excessive failures. Extremely close mowing will increase problems. Needless to say, no one suffers more than the golf course superintendent when turf fails." □

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ATHLETIC TURF

Low maintenance turfs recommended for roughs

Rough areas account for 40 to 60 percent of most golf course acreage. Dr. **Terry Riordan** of the University of Nebraska believes more prudent care will be required for roughs, based on current environmental concerns and water shortages.

"When we think about roughs in the future," says Riordan, "we're going to be thinking about reducing management—reducing mowing, reducing the fertilization requirement and reducing irrigation."

Riordan believes a good length for roughs is 1½ to 3 inches, with mowing required about every two weeks.

Tall fescue and buffalograss are two of Riordan's choices for seeding the rough areas.

Safety talks continue

Annual confrontations with Michigan State University students over the spraying of 2,4-D have taught **Gary Parrott** and **Ron Foote** of the MSU grounds department many lessons about worker competence and safety, and the importance of communication.

"If you want a headache," says Foote, "have a person who's on the end of a sprayer answer 'I don't know,' when asked what is being sprayed. You want the people who are using the material to be acquainted with it."

Continuing education is also essential proof that your staff is concerned and knows what they're doing. "On a yearly basis," explains Foote, "generally in the winter, (chemical experts) from outside the campus come in and talk to our people, and give them information on the chemicals they use."

Parrott and Foote take their annual sparring with the students in stride, and aren't at all defensive. "Because the concerns of a caring public need to be addressed," says Foote, "the information (they seek) must be delivered effectively and openly. Providing this information will enable us to keep the necessary tools, while performing services needed to maintain a safe and healthy environment."

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Pick the Turfcat™ model to tame your toughest mowing schedule.

Mowing days go faster and easier when you turn a Turfcat loose. Choose from two models with a wide-track 4-wheel stance and easy-handling power steering: the C417D, powered by a 16.5-hp diesel; and the C420G, with a 21-hp gas engine. Both engines are liquid-cooled for longer life and quieter performance.

Two 3-wheel models are also available to get you in and out of the tight spots: the nimble C318G with an 18-hp I/C air-cooled gas engine; and the 22-hp liquid-cooled diesel C322D, with high efficiency hydraulic PTO drive for quieter operation, reduced maintenance and longer life.

You can feel the extra power and traction on all four Turfcats, delivered by a 2-speed limited-slip transaxle, with power for mowing and traction in low range, and quick transport in high range.

On the slopes, Turfcats hold their ground with wider stance and lower center of gravity. Choose a rotary or flail mower from 50- to 60-inches, or the high production 72-inch deep tunnel deck, that moves clippings out fast for extra mowing capacity without windrowing or clumping.

All Turfcat models are designed to take the work out of mowing, with a single pedal forward/reverse control and foot-operated hydraulic implement lift.

See your Jacobsen dealer today to find out more about the toughest cats on turf. Attractive lease and finance plans available. Jacobsen Division of Textron Inc., Racine, WI 53403.

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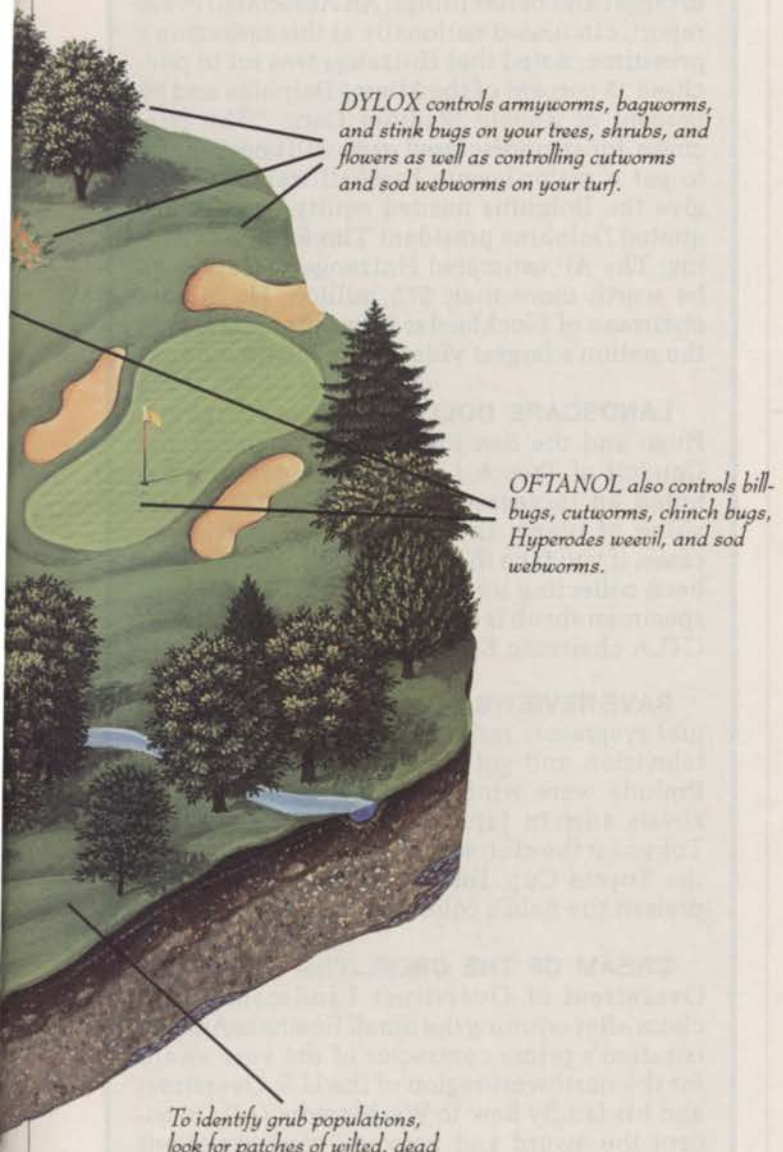
For best results, thoroughly irrigate prior to treatment. Follow your application by watering in to a depth of 1 to 1½ inches.

DYLOX and OFTANOL are Reg. TMs of Bayer AG, Germany ©1989 Mobay Corporation

When you have grub control this effective, you have grounds to celebrate.



DYLOX controls armyworms, bagworms, and stink bugs on your trees, shrubs, and flowers as well as controlling cutworms and sod webworms on your turf.

OFTANOL also controls billbugs, cutworms, chinch bugs, Hyperodes weevil, and sod webworms.

To identify grub populations, look for patches of wilted, dead or dying turf. Grub-infested turf has pruned roots which make it easy to pull back like carpet.

Some of the most celebrated courses in the country turn to Mobay products for *grub protection*.

For preventative treatment, there's OFTANOL® Insecticide. It controls *grubs* longer than any other product available. Apply it in the spring before *grubs* show up. After all, spring rains and temperatures can mask a *grub* problem.

Or apply a pre-damage application of OFTANOL when *grub eggs* hatch and activity begins (usually right after a drought-breaking rain in the early fall). But only apply OFTANOL once a year. If you've already used it in the spring, treat with DYLOX® Insecticide.

Of course, if grub damage turns up, apply DYLOX followed by heavy watering. DYLOX controls *grubs* in as little as 24 to 48 hours.

For more information, contact your Mobay distributor or Mobay sales representative. They can help you make your turf look great. And that makes you look great. Which is cause enough to celebrate.

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SHORT CUTS

YEA FOR NATURAL TURF... Pro Football Hall of Famer **Merlin Olsen** is an ardent supporter of natural turf for gridirons. During a football telecast on NBC-TV late last season, Olsen said: "I look forward to the day when we can put natural turf into a dome...and it's coming." Fellow telecaster **Charlie Jones** added, "Experiments at EPCOT Center are doing just that." The ability to grow grass in a domed stadium is the topic of a major feature story elsewhere in this issue.

BIGGER AND BETTER...Wayne Huizenga, former chief at the TruGreen Corp., has gone on to bigger and better things. An Associated Press report, circulated nationally at this magazine's presstime, noted that Huizenga was set to purchase 15 percent of the Miami Dolphins and 50 percent of Robbie Stadium Corp. "The purchase, for an undisclosed sum, will boost efforts to get a major-league baseball franchise and give the Dolphins needed equity," the report quoted Dolphins president **Tim Robbie** as saying. The AP estimated Huizenga's interests to be worth more than $75 million. He is now chairman of Blockbuster Entertainment Corp., the nation's largest video rental chain.

LANDSCAPE DOLLAR$... Since Hurricane Hugo and the San Francisco earthquake, the Council of Tree & Landscape Appraisers has noted an increased interest in the financial value of plants in the landscape. "In many cases, if you take the proper steps" people have been collecting some compensation if a tree or specimen shrub is damaged or destroyed, notes CTLA chairman **Erik Haupt**.

RAVE REVIEWS... Two of Lofts Seed's perennial ryegrasses recently appeared on Japanese television and got great notices. Palmer and Prelude were winter-overseeded on dormant zoysia turf in Japan's National Stadium in Tokyo for the club soccer world championship, the Toyota Cup. During narration, a reporter praised the field's color and beauty.

CREAM OF THE CROP... That's what **Ron Overstreet** of Overstreet Landscaping can claim after winning the Small Business Administration's prime contractor of the year award for the northwest region of the U.S. Overstreet and his family flew to Washington, D.C., to accept the award and personal congratulations from Sen. Bob Packwood. He won the award for the job done at Lost Creek Dam and its surrounding area in Trail, Ore. Overstreet was the youngest of the award recipients.

INSURANCE

Tank insurance required soon

ORLANDO, Fla. — Is underground storage tank insurance a big deal? It must be, since the Environmental Protection Agency has set an official deadline for financial responsibility for groundwater contamination caused by leaky containers: October 26, 1990.

Thankfully, the GCSAA has made the insurance for this latest government assault bearable with an affordable insurance program.

Financial Guardian of Kansas City is the underwriter for the insurance. Cost of coverage will range from $431 per year up to $1685. Premiums are reduced by seminar and self audit credits. The coverage provides $1 million in aggregate coverage, and includes a $1000 minimum deductible and third party liability coverage.

Richard Shanks: underground tank insurance deadline is October 26, 1990

Bare steel tanks more than 20 years old will not be covered. According to Richard Shanks, a Financial Guardian spokesperson, no company but Financial Guardian will insure a bare steel tank that is more than 15 years old.

"Make no mistake," says Robert Ochs, GCSAA legal counsel, "the EPA will enforce the law, and it will be very costly once it's enforced." □

EQUIPMENT

Avoid 'sticker shock' by buying used trucks

MIAMI — Many landscapers today can be torn between their need to replace or add trucks and their accountants' warning to conserve cash.

The cost of purchasing new trucks has resulted in a business version of the "sticker shock" so familiar to Americans shopping for new cars. An alternative to this problem could be purchasing used trucks.

"Postponing or foregoing the purchase decision is a form of Russian roulette," notes Glenn Schneider, vice president of Ryder Truck Rental. "Aging vehicles break down more often and are more costly to maintain. Moreover, customers can be lost when service is delayed because of disabled vehicles or insufficient fleet size.

"A truck that has been serviced at regular intervals can provide many years of useful, inexpensive service."

When considering the purchase of a used truck:

- make sure to see a dated maintenance log, showing when and what parts were replaced;
- match specifications with your intended use; and
- make sure the vehicle complies with local height, length, weight and emissions control regulations.

Savings for a well-maintained four- to five-year-old truck or tractor will typically range from 40 to 60 percent of its cost when new.

Ryder has a free brochure "How to Buy a Used Truck" available by calling (800) 446-5511 or writing: Used Vehicle Sales, P.O. Box 020816, Miami, FL 33102. □

All around the customers' lawn...

Now's the time to remember Roundup® herbicide to keep your customers' lawns free of weeds. Remember that Roundup controls a broad spectrum of weeds, roots-and-all. Use Roundup for edging along driveways, fences, sidewalks—all around the lawn. For more information, call toll-free **1-800-323-1421**, and REMEMBER THE ROUNDUP.

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LANDSCAPE MANAGER OF THE YEAR

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LANDSCAPE MANAGEMENT
Formerly WEEDS TREES & TURF

1989 Landscape Manager of the year
Morris Lee Martin

Entry forms are now being accepted by the Professional Grounds Management Society and LANDSCAPE MANAGEMENT magazine for their fourth annual "Landscape Manager of the Year" award.

The purpose of the award is to recognize superior job performance among landscape managers, to challenge those involved in the industry, to achieve higher standards of excellence, and to bring national recognition to deserving managers.

Any person directly responsible for the professional maintenance of one or more landscapes is eligible to enter. Applicants will be judged according to job performance, honors and awards, procedures and philosophies, and contributions to the green industry. Applicants will be asked, at the time of entry, to submit four 5 x 7 black-and-white glossy photos and 10 color 35mm slides of current work areas with a short narrative on each.

First prize is round-trip airline fare to the Green Industry Expo, Nov. 11-14 in Nashville, Tenn., where the award will be presented.

(clip and mail)

Applicant's name **Title**

Applicant's company

Official entry form should be sent to:

Name **Title**

Company

Address **City/State** **Zip Code**

Mail to: PGMS, Landscape Manager of the Year, 1201 Galloway Ave., Suite 1E, Cockeysville, MD 21030, 301-667-1833

GOLF

'Get tough!' in negotiations for contracts, attorney says

ORLANDO, Fla. — An Atlanta attorney-at-law advises golf course superintendents to obtain as many advantages and benefits as possible during contract negotiations.

"You need to draft a contract," says Charles Palmer. "You'd be surprised how many things you can sneak into a contract...either by slanting a term in a particular way if you write the contract, or by including things that were never discussed during the negotiations but that look like they would be part-and-parcel of any normal contract."

Palmer further advises superintendents to be attentive to what, exactly, goes into their job descriptions.

"When you draft the contract," says Palmer, "make sure you include as many things as you can think of that you're going to be responsible for, the things that are going to be your duties."

Additional contract provisions Palmer finds important are indemnification clauses and arbitration clauses.

With an indemnification clause, says Palmer, "someone else is assuming any liability you may have for a personal injury or property damage you may have caused a third party."

According to Palmer, an arbitration clause basically means that "if there's a dispute under the contract, you resolve it in arbitration rather than in the courts." It is a clause which Palmer says "takes a lot less time and a lot less money."

He made his points on the subject at the Orlando GCSAA convention held in February. □

Charles Palmer: Superintendents should draft employment contracts.

AWARDS

Free airfare to Expo on the line

CLEVELAND — Nominations are now open for LANDSCAPE MANAGEMENT's fourth annual "Man of the Year" award. The contest is jointly sponsored by this magazine and the Professional Grounds Management Society.

First prize is a "Landscape Manager of the Year" plaque and free roundtrip air fare to the Green Industry Expo Nov. 12-14 in Nashville, Tenn.

To obtain entry forms, send your name and address to: Landscape Manager of the Year, PGMS, 12 Galloway Ave., Suite 1E, Cockeysville, MD 21030 or mail in the form on page 22 of this issue. □

ORNAMENTALS

Demographics to boost business in flower markets

ST. CHARLES, Ill. — There will be more opportunities for using flowers in the landscape, thanks to emerging demographic shifts.

Herman de Boon, general manager of CebecoGroup told a GrowerExpo audience that—as more countries enter the world markets in the 90s—new

continued on page 24

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Put your sod farm, your athletic field, your fairway, park and lawn areas ahead of the times with All★Star. Seed with confidence because this is a proven perennial ryegrass that grows in sun and shade, germinates quickly, forming an attractive turf that withstands heavy traffic.

Because All★Star resists sod webworms and other turf insects as well as brown patch, leaf spot and crown rust, you have a low maintenance turf. And where else will you find such a uniform, richly textured, thick, dark-green turf? That's why it's named All★Star! It grows well with bluegrasses and fescues.

All★Star, The Grass of the future...here today.

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For more information contact: Circle No. 102 on Reader Inquiry Card

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FLOWERS *from page 23*

opportunities, new threats and more competition will follow in a narrow timespan.

According to de Boon, world urbanization will increase from 40 percent in 1980 to 47 percent by the year 2000. "That's a positive development for flower consumption," predicts de Boon.

"Another important factor is age distribution. There will be a shift in the age distribution in Europe and in the United States. There's a trend to fewer younger people and to more elderly people, and this trend gives an increase in consumption." □

EQUIPMENT

Avoid pitfalls of bidding process

ORLANDO, Fla. — Bidding properly for golf course equipment requires much more than kicking a few tires and driving a mower out of the showroom.

The demand for quality equipment and better-looking golf courses is higher than ever before. Buyers are better educated and more concerned with getting the most for their equipment dollar.

"Conditions that used to be required by private clubs are now the norm for the public clubs," says Daniel Coffin, regional sales manager for Jacobsen Textron. "Therefore, the standards must be higher and the quality of tools must be higher."

Coffin believes that two pitfalls trip up buyers most often. "Not often enough are the correct people brought in during the decision process. Many times the superintendent or turf professional is not involved in the bidding process.

"Secondly," continues Coffin, "too much emphasis is placed on the initial cost; therefore the specifications are written with only minimal requirements. As a result, you get the minimal quality equipment trying to give you maximum quality results." □

RIGHTS-OF-WAY

Pa. Turnpike gets beautification plan

HARRISBURG, Pa. — The Pennsylvania Turnpike Commission has begun a landscape architecture beautification project along two major expressways.

Landscape architect Donald T. Gilligan says safety, low maintenance, community appearance, roadside aesthetics and environmental sensitivity are motivating factors for the two projects. Work will commence along the proposed Beaver Valley and Amos K. Hutchinson Expressways.

Two major tenants of the proposed plan are:

1. Paved road shoulders and seeded areas will provide a 30-foot clearance allowing for sunlight to help de-ice. The proposed clearance areas will also reduce the threat of falling limbs and trees, and provide an adequate field of view for wildlife movement and safe sight distances.

2. Installation of plant material to provide a visual buffer near homes where construction will affect the overall appearance of the area. Efforts are being taken to advise and work cooperatively with the contractors so that maximum existing vegetation and trees at critical areas will not be removed.

"We hope to provide visual diversity, reducing monotony and enhancing views from the toll road," says Gilligan.

"We'll be using birdsfoot trefoil, switchgrass and wildflowers in roadside areas."

The projects are to be funded directly by turnpike monies, and not by tax dollars. □

EVENTS

APRIL

17-18/23-24: Rain Bird Contractor Business Development Seminars, Charlotte, N.C./Southern California. Contact your local Rain Bird distributor.

21-25: South Florida Landscape Trade Show, Radisson Centre, Miami. Contact: Charlye Roberts, (305) 235-2035

26-27: Golf Course Development, Stouffers Esmerelda Resort, Indian Wells, Calif. Contact: Conference Administrator, Inst. for International Research, 437 Madison Ave., 23rd Floor, New York, NY 10022-7001; (212) 826-1260.

27-28: California Landscape Contractors Association, Winter Tri-Board Meeting, Hyatt Regency, Long Beach. Contact: Micheyl Barnett, (916) 448-2522.

25-29: San Francisco Landscape Garden Show, Piers 2 and 3, Fort Mason, San Francisco. Contact: Dick Turner, McLaren Lodge, Golden Gate Park, San Francisco, CA 94117; (415) 221-1310

MAY

10-12: California Council of American Society of Landscape Architects, Sacramento. Contact: Alison Dumas at (916) 621-2236.

16: North Carolina Turf and Landscape Field Day, North Carolina State University Turf Field Center and Arboretum, Raleigh. Contact: Bill Wilder, NCLCA, P.O. Box 400, Knightdale, NC 27545; (919) 266-1777.

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These Two Just Improve

Introducing New Liquid Flowable Vorlan® and Fungo® Turf Fungicides.

For years, they've been top performers on courses everywhere. Now they're in even better form—safer, easier-to-use liquid flowable.

New Vorlan Flo gives you superior control of Dollar Spot, Leaf Spots, and other tough diseases. The unique chemistry makes it both a curative and a preventive. And, protection is long-lasting—up to 28 days.

New Fungo Flo gives you broad spectrum control of most major turf diseases, including Brown Patch and Fusarium Blight (Summer Patch and

Pros Have d Their Form.

Necrotic Ring Spot). Systemic action provides effective disease control for up to 14 days.

And, for unequalled control of the six toughest turf diseases—Dollar Spot, Brown Patch, Anthracnose, Red Thread, Leaf Spot, and Melting Out—simply tank mix Vorlan and Fungo at low rates. It's a twosome that can't be beat.

Vorlan and Fungo. Safe for use on all turfgrasses. Proven effective. And now available in liquid flowable form. Contact your Grace-Sierra distributor today and order new liquid flowable Vorlan and Fungo. Or, call us toll-free at 1-800-492-8255. And get their winning form going for you.

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Tournament Condition Every Day.

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Circle No. 160 on Reader Inquiry Card

Major league camps on hold at presstime

BASEBALL CITY, Fla. — As this month's issue of LANDSCAPE MANAGEMENT went to press, field managers at the major league baseball spring training camps were still waiting for the players' strike to be settled.

"We just got the minor leaguers in," notes **Matt Taylor**, assistant at the Kansas City Royals camp here, "but we're still waiting around for the major leaguers.

"We're still busy, working seven days a week, though."

Baseball City has alternatives some other training campsites don't: amateur, college and high school athletic directors like to use the facility to showcase their teams.

Nine people tend the major facility that hosts the Royals, plus the Class AAA minor league field, four cloverleaf fields and a half-field for infield practice. They are under the watchful eye of **George Toma** of the parent organization and field supervisor **Ed Mangan**.

The stadium itself is a unique story. The infield is synthetic turf while the outfield is natural bermudagrass overseeded with ryegrass. The field was built to those specifications at the request of the Royals, who play on synthetic turf. The infield allows defensive players to practice on the same surface they'll be playing on during the regular season, while the outfield is easier on the players' knees.

Matt Taylor of Baseball City, Fla. says morale is high despite the absence of the Bo Jacksons and George Bretts.

Grassy areas under less intensive maintenance—like the area containing 13 pitcher's mounds and plates—are bahiagrass.

Taylor says the morale of field maintenance personnel this spring has remained high, despite the lack of major league stars like Bo Jackson and George Brett, and the closing of the adjacent "Boardwalk and Baseball" amusement park.

On the day LANDSCAPE

EASY COME.

Top row: *Leaf-feeding caterpillar, Mealy bug, Japanese beetle, Bagworm, Gypsy moth.* Bottom row: *Cankerworm, Leaf skeletonizer, Tent caterpillar, Webworm.*

MANAGEMENT visited the facility, high school teams were squaring off in the stadium usually reserved for the Royals during this time of year.

Major league team owners locked out players from spring training camps in late February. By March 13, little headway had been made toward starting the season in earnest, due to conflicts between the owners and the Major League Players' Association.

"We're still on standby," notes Taylor, "so anytime the strike comes off, we're waiting for them."

Faubel elected to presidency

Gerald Faubel, superintendent at the Saginaw (Mich.) Country Club, was elected president of the Golf Course Superintendents Association of America during its February convention and trade show.

Faubel succeeds **Dennis Lyon**, who will serve for one year as association director.

New association vice president is **Stephen Cadenelli**. **William Roberts** was re-elected as a director and named secretary/treasurer.

Also re-elected as directors were **Joseph Baidy** and **Randall Zidik**.

Charles Passios was appointed to the board to fill Cadenelli's vacated director's position.

Gary Grigg and **Randy Nichols** continue to serve terms as directors.

Other moves

Dr. Leah Brillman has joined Seed Research of Oregon as research director. She received her M.S. and Ph.D. from the University of Arizona in Agronomy and Plant Genetics. She was research director at Jacklin Seed Co.

Mickey Strauss of American Landscape, Inc., has been elected president of the California Landscape & Irrigation Council. The council is a trade association of union-affiliated landscape and irrigation contractors who specialize in large-scale commercial, industrial, housing and public works projects.

John Zoller, former senior executive director of the Northern California Golf Association, has been selected by the American Society of Golf Course Architects to receive its 1990 Donald Ross Award. The award is given to someone who has contributed to the growth, understanding and public awareness of the importance of golf course architecture to the game of golf.

Don Thill, weed scientist at the University of Idaho College of Agriculture, has been selected as the Weed Science Society of America's 1989 Young Weed Scientist of the Year.

Betsey B. Smith has been elected executive director of the North Central Turfgrass Association. Smith is an Ohio State graduate with lawn care experience in Texas and Ohio.

New officers of the New York State Turfgrass Association are: **Stephen Smith**, president; **Michael Maffei**, vice president and **Timothy Madden**, treasurer. Directors include **Eugene R. Bowler, Jr.**, **J.R. Brundage**, **Thomas Corell**, **John Fik**, **Steve Griffen**, **John Liburdi**, **Karl Olson**, **Tom Strain** and **William Stark III**. □

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Circle No. 137 on Reader Inquiry Card

THE MILLION DOLLAR MOWERS

Mowing/management companies in 1989 marketed smarter, survived heavy rains, and became more influenced by political issues. The challenge now is to capitalize on whatever the '90s have to offer.

by Terry McIver, associate editor

As the 1980s ended, U.S. mowing companies faced an interesting array of challenges: there were buckets of rain for some, increased legislation and economic uncertainty for others. But the true challenge these companies faced was to deal with adversity and still keep business profitable.

In interviews conducted for our survey of "Million Dollar Mowers," companies related some of the obstacles they faced in 1989, how they worked smarter and what they plan for the year ahead.

Proceed with caution

Businesses in states with poorer economies are cautious and on the defensive, but still try to gain more customers with added services.

Robert Mann of Hunt & Hulteen, Brockton, Mass., says the company is trying to be more "prudent," especially considering the condition of Massachusetts' economy.

Mann reports the company has added an arborist to the staff to conduct pruning and spraying "on a full-blown professional level, rather than as a supplemental service." One of Hunt & Hulteen's marketing strategies includes offering shallow-well drilling to power irrigation systems. Mann says this involves drilling 60 or 70 feet to the water table to reach an adequate water source.

Mark Arrimour of Pennink-Arrimour, Bryn-Anthyn, Pa. noticed a slowdown caused by a slower economy, and he notes the green industry's acute sensitivity to the slightest economic downturn.

"People are doing more renovation work instead of going out and buying new properties," explains Arrimour. "They're trying to use more of what they have due to budgets. When the economy slows down, landscaping is the first thing that gets nailed."

Arrimour says 1990 "will will be a drastic change from 1989," relative to customer loyalty and cost cutting. "We are on the high end of contractors (price-wise)," explains Arrimour. "Companies are saving dollars by going with someone who isn't as full-service. The site won't look great, but it won't look bad, so (companies will decide) to save the dollars."

More than mow

KT Enterprises, Alexandria, Va. is betting its customers will be attracted to the full-service concept.

President **Scott Plein** says, "Our emphasis in 1990 wil be to integrate all of our landscape management services together to provide the best overall care for our client. We are a full-service company, from installation and management of irrigation systems to landscape design/build as well as lawn care. We are marketing all services to our main clients, which are our landscape maintenance clients."

Another marketing-influenced restructuring was undertaken in 1989 by Lancaster Landscapes, Arlington, Va.

Brent Mayberry, vice president and chief operating officer, says the company reorganized in order to branch out into new markets, and to prepare for growth in the '90s. Problems cited by Mayberry were also the tremendous amount of rain. "We cut more grass than we ever would, for a longer time than ever in the past,"

recalls Mayberry. "It (1989) was also a tough year for grounds maintenance, with more disease and insect problems."

According to Mayberry, some residential-based irrigation companies in the Arlington area went out of business due to too much rain. "If it's not hot and dry," says Mayberry, "people aren't thinking about irrigation." Irrigation companies with more commercial clients remained busy, however. According to Mayberry, commercial sites install irrigation systems as a matter of course; if they need the water, it will be there.

On the rebound

The economy of Houston, Texas has long been upset by the decline in that state's oil industry. But for Environmental Landscape Services, things are on the upswing.

"For the first time in a while, I feel good about business in our part of the world," says company president **Charlie Racusin.** "We're headed in a good direction. I feel comfortable and enthused, and have nothing but good to tell you. The opportunity for growth in past years was not as good as this year in Houston."

According to Racusin, profit margins are much more competitive than they were five or six years ago. "The people I'm selling to are also positive and not nitpicking as much."

Gregory Spencer of The Spencer Co., also located in Houston, believes the market size and desired quality of landscape management services continues to grow into the 1990s.

"In order for our industry to meet the challenge of the future," says Spencer, "it is imperative that we continue to train our personnel towards higher productivity and use the latest technology available to our industry.

"The recruitment, development and retention of experienced and educated employees at all levels of the company is a high priority for our industry."

Spencer, much like other landscape professionals, is aware of the continuing challenge the industry faces to find and retain a competent workforce.

The industry is aware of the problem, and fortunately, is doing something about it. The secret is to control events before they control you. Continues Spencer, "We compete not only within our industry for qualified personnel, but also with unrelated industries in the service sector. The quality of management, employee recognition, better benefits, company climate and opportunities for career growth are some of the factors which will have a bearing on the retention of good employees an increasingly scarce resource."

The labor question

Allan Curr says Wm. Vandergeest Landscape Care, Santa Ana, Calif., is in the enviable position of having to turn down more work.

"We've reached a size where I feel quite comfortable. The most difficult thing is being polite enough to turn down a client without them thinking you're being snooty," notes Curr. "We're sort of staying where we are in size for until I train more personnel."

Curr says, however, that labor retention problems remain.

TALLYING UP THE TOTALS

The following companies responding to our "Million Dollar Mowers" survey reported more than $1 million in mowing/management revenue in 1989.

1. Environmental Care, Inc., Calabasas, CA— **$44 million.**
2. The Brickman Group, Jenkintown, PA— **$19.3 million.**
3. Lancaster Landscapes, Inc., Arlington, VA— **$12.5 million.**
4. Shearon Environmental Design Co., Inc., Plymouth Meeting, PA— **$6 million.**
5. Cagwin & Dorward, Novato, CA—**$5.2 million.**
6. Stiles Landscape Service Co., Pompano Beach, FL— $5 million.
7. AAA Lawn Industries, Tucker, GA—**$4.9 million.**
8. Green Thumb Enterprises, Sterling, VA—**$3.5 million.**
9. K.T. Enterprises, Alexandria, VA—**$4 million.**
9a. Las Colinas Landscape, Irving, Texas—**$4 million.**
11. California Landscape Maintenance, Inc., Canoga Park, CA— **$3.5 million.**
12. Heyser Landscaping, Norristown, PA—**$3.3 million.**
13. Pampered Lawns, Inc., Houston, TX—**$2.9 million.**
13a. William Vandergeest Landscape Care, Santa Ana, CA— **$2.9 million.**
15. Clarence Davids & Co., Blue Island, IL—**$2.8 million.**
16. Moore Landscapes, Inc., Glenview, IL—**$2.4 million.**
18. BGT Landscape Co., Inc., Mundelein, IL—**$2.2 million.**
18a. Lawn Ranger, Inc., Zionsville, IN—$2.2 million.
19. Greenleaves, Chamblee, GA—**$2.1 million.**
20. American Landscape Maintenance, Canoga Park, CA—**$2 million.**
20a. Landcare Industries, Tampa, FL—**$2 million.**
22. Nanak's Landscaping of Orlando, Altamonte Springs, FL— **$1.9 million.**
23. Pennink-Arrimour, Bryn Athyn, PA—$1.8 million.
23a. Moon Landscaping, Yardley, PA—**$1.8 million.**
23b. Ruppert Landscape Co., Aston, MD—**$1.8 million.**
26. Mainscape, Inc., Fishers, IN—**$1.7 million.**
27. Alfred L. Simpson & Co., Inc., Atlanta, GA—$1.4 million.
27a. Grounds Management and Landscaping, Mitchelville, MD—**$1.4 million.**
27b. SKB Lawn Industries, Clarkson, GA—**$1.4 million.**
27c. The Spencer Co., Houston, TX—**$1.4 million**
31. The Bruce Co., Racine, WI—**$1.1 million.**
31a. Hunt & Hulteen, Inc., Brockton, MA—**$1.1 million.**
31b. Tecza Brothers, Inc., Elgin, IL—**$1.1 million.**
34. Earth Tone Development, Houston, TX—**$1 million.**

OVER $1 MILLION, FIGURES NOT RELEASED:

Environmental Landscape Services, Inc., Houston, TX
KEI Enterprises, Cudahy, WI
Allen Keesen Landscape, Inc., Denver, CO
Minor's Lawn Care, Ft. Worth, TX
Northwest Landscape Industries, Tigard, OR
Proscape Co., Dallas, TX

To retain a good labor force in the 1990s companies will have to pay much higher wages to keep people on board.

Lawn care services are often trimmed during economic downturns.

"The primary (cause) is the pay scale in this industry," explains Curr. "I'm not saying you get better people if you throw money out there, but it would help. Maintenance is not a high paying industry in California.

"In order for an employee to live halfway decently in Southern California," says Curr, "and have more of an incentive for longer term commitment, first of all he needs more education and beginning base pay has to be around $8 an hour."

What do "Million Dollar Mowers" have in common? For some, success has been won through traditions of service excellence. Marketing skills, a dedicated work force and diversity of service to a large client base insures the success of others.

Common traits that both large and small companies must adopt or continue to practice is preparedeness and adaptability.

"Successful companies will have to have a complete understanding of the total costs of the business and reasonable profits required to meet the needs of the marketplace"—— Gregory Spencer

What's the secret?

The weather surely can't be expected to cooperate. Politically-motivated legislators will continue to put up roadblocks, and the economy can change in a matter of days. The dual challenge is to manage, contribute to or be ready for the outcomes of the behind-the-scenes politicking while trying to run a profitable business.

Sensitivity to the issues and smart business practices will make the '90s a harmonious, safe and profitable decade. **LM**

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Test reports indicate Classic's ability to produce a highly dense stand and excellent percent of living ground cover all year long.

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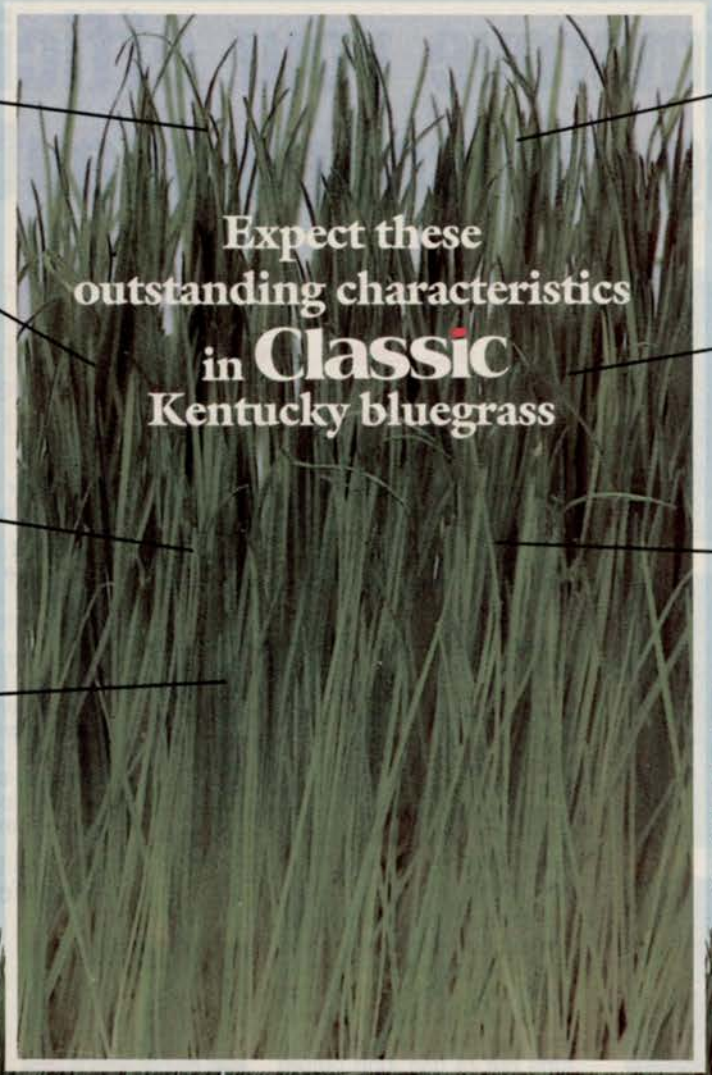

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Circle No. 150 on Reader Inquiry Card

With virtually endless varieties of colorful woody ornamentals now available in nurseries, many landscapers are purposely creating Dyclomec-safe beauty spots such as the one above. Photos on the right show how Dyclomec can turn a fence line into a landscaping highlight.

How to improve your efficiency in managing landscape beauty spots

Nothing says as much about a landscaper's expertise as the appearance of ornamental beds, fence lines, tree wells, etc. Learn how Dyclomec® Landscaping Herbicide can help keep these beauty spots weed-and-grass-free for considerably less money than you are now spending.

In recent years, the usage of Dyclomec has increased at an unprecedented rate as more and more landscapers have learned from direct experience what a labor-saving, cost-saving chemical tool it is.

And now, it is your turn to discover how you can use Dyclomec to keep problem areas such as fence lines, tree wells, ornamental beds, etc. free from weeds and grasses. Of course, you know how important this is, because the most neatly manicured turf and beautifully trimmed ornamentals are wasted if your landscaping highlights are spoiled by an ugly growth of weeds and grass.

Perhaps you've tried a contact herbicide only to find that the vegetation grows right back. Perhaps you've tried a flower-safe pre-emerge, only to find that it runs out of gas long before the season is over, and that its narrow spectrum misses the very weeds and grasses you need to control.

Broad-spectrum strength. In desperation you may have gone back to your string trimmer and a hoe. But cheer up — because this is the year you discover Dyclomec.

Indeed Dyclomec's active ingredient is unique in all the world. No other chemical is so versatile and so helpful to the landscaper.

It's *both* post-emerge and pre-emerge; it controls *both* grasses and broadleaves, even such toughies as quackgrass and spurge; it controls *both* annuals and perennials; it has the broadest spectrum of any pre-emergent in the world; one treatment lasts all season and then totally biodegrades.

What is Dyclomec — how does it work?

The active ingredient in Dyclomec is dichlorobenzonitrile. We mill it into razor-thin crystals and incorporate it into a special granule that our researchers developed in 1985.

You simply spread the granules on any precise area you want to keep clean. You can put the granules down over existing weeds and grasses or you can put them down over

Schematic drawings show why Dyclomec works where conventional (flower-safe) pre-emerges fail.

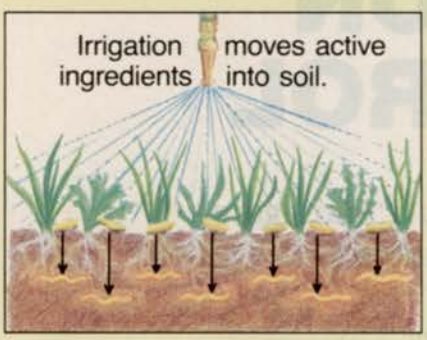
Flower-safe pre-emergent herbicides in some instances have to be present in adequate strength before germination occurs. Such herbicides simply will not knock out weeds after they germinate.

Furthermore, these flower-safe pre-emergents are broken down by light and microbial action and thus begin to lose strength from the very first day they are applied.

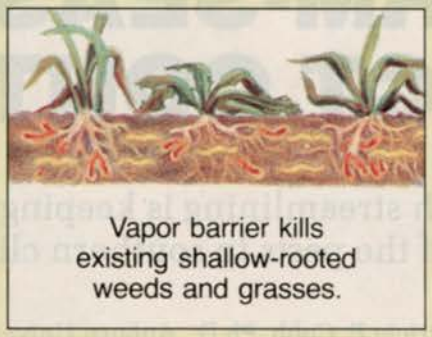
Seeds, of course, can germinate almost anytime during the year, depending on the weather and the weed or grass species. Thus it is that many seeds can germinate past the efficiency period of the pre-emerge — or could have germinated before the pre-emerge is applied. It's a narrow window at best, and characteristically the spectrum of a pre-emerge that stops germination is relatively limited.

Of course, these flower-safe pre-emergents have no effect at all on existing weeds (that's why it's safe to spray them over flowers). Accordingly, to clean up a landscape beauty spot, it is necessary to kill existing vegetation with a contact herbicide. Or clean it out by hand.

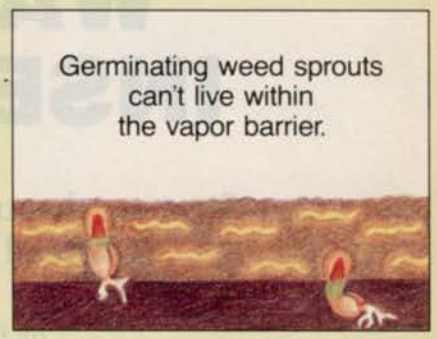
Now ... take a minute to study the schematic drawings on this page that delineate the remarkable activity of Dyclomec ... then, as a professional, ask yourself if you shouldn't at least give Dyclomec a trial.



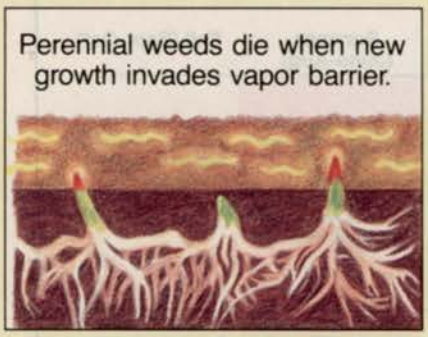
Dyclomec granules are spread in areas you wish to keep clean from weeds and grasses. It is all right to spread them over existing vegetation if you want to kill it. Water moves the active ingredient into the top 2 or 3 inches of the soil, where it forms a vapor barrier that kills meristematic tissue.



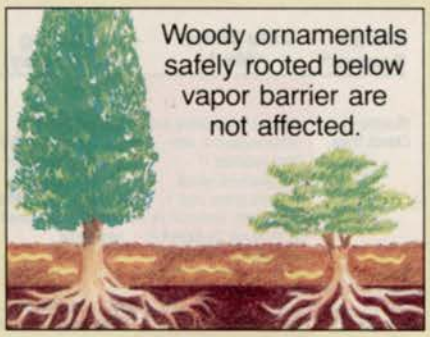
Dyclomec kills all existing weeds and grasses because their tender roots are in the vapor barrier. Even such toughies as quackgrass, crabgrass, Bermudagrass, spurge, oxalis and ground ivy will die when their roots are exposed to the Dyclomec vapor barrier, resulting in beautifully weed-free grounds all season long.



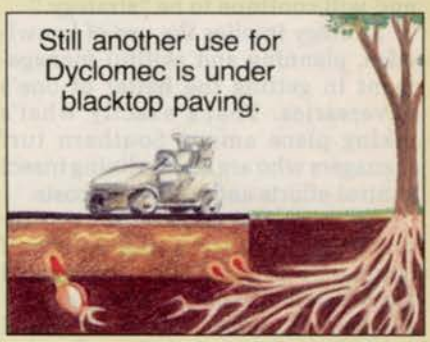
Weed seeds either in or below the vapor barrier cannot emerge because the barrier kills their meristematic tissue. And, since Dyclomec gives season-long control, there is no critical time table as to when it must be applied. Do it at your convenience, confident that the treatment will be effective.



Perennials coming out of dormancy die when their new sprouts hit the barrier. Likewise, creeping grasses like Bermuda are pruned back when they try to invade the vapor barrier. So long as the Dyclomec vapor barrier is present, you can be sure that the area is going to be free of weeds and grasses.



Woody ornamentals that have roots below the vapor barrier are unaffected. Because of this, many landscapers deliberately plan their "beauty spots" to contain colorful, woody ornamentals that are Dyclomec-safe. The overall beauty is enhanced and the maintenance cost is reduced.



Blacktop cart paths that are underlaid with Dyclomec will not have weeds poking through their surface nor shallow roots invading from below and threatening to buckle the blacktop. Of course, this is also true of areas that are covered with gravel or pebbles, or even cobblestones or bricks.

bare ground, or bark, or mulch or pebbles. The herbicide can work its way down through any kind of groundcover that weeds can work their way up through. All you need to do is be sure it is incorporated into the soil. So, in most instances, the best thing to do after spreading it is to sprinkle it in with irrigation.

The herbicide will penetrate into the top layer of soil and form a vapor barrier approximately 2 to 3 inches deep. This vapor barrier is not water soluble so it has very little lateral movement.

The vapor barrier kills meristematic tissue, and thus no shallow-rooted plants can live in it. No newly germinated seeds can live in it, and no perennial shoots coming up from dormancy can penetrate it. And yet existing, deep-rooted woody ornamentals are completely safe.

And here's the really good news! It lasts all season long, and then totally biodegrades.

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719-289

WARM-SEASON INSECT CONTROL

Strategy through streamlining is keeping turf managers ahead of the pests in southern climates.

by Patricia P. Cobb, Ph.D., Auburn University

The key element to keep in mind when preparing to control insects in Southern turf has been and will continue to be "strategy."

Strategy implies the use of knowledge, planning and skillful management in getting the better of one's adversaries. That's exactly what's taking place among Southern turf managers who are streamlining insect control efforts and treatment costs.

An increased demand for quality turf, coupled with the wide variety of Southern turf insect pests, has created the potential for outrageously expensive control efforts. These increased costs, coupled with today's heightened awareness of environmental protection, have meant developing and adopting new approaches to both old and new insect problems.

An affordable, effective control strategy will use available pesticide information to select and benefit from today's biological, cultural and chemical tools.

Problem insects

Although mole crickets and fire ants remain the most expensive turf insects to control, grub problems continue to become more widespread throughout the Southeast. Spittlebugs, once a coastal problem, now damage turf in most areas of the Gulf States and Georgia.

In 1989, tropical sod webworms, usually found only in central and south Florida, were reported by lawn care professionals in areas along the Gulf Coast.

Annual pests in Florida, southern Georgia and the southern half of the mid-Gulf states, mole crickets have made their way into the Carolinas and

INSECT CONTROL CALENDAR

Warm-Season*	Late Winter (Mar)	Spring (Apr-May)	Summer (June-Aug)	Fall (Sept-Oct)
(Southern) Chinch Bugs	Replace susceptible turf with resistant or non-host varieties. If overwintered adults become active treat in March with diazinon[1] (4 lb AI/Acre), Dursban® (1 lb AI/Acre), Triumph2® (1 lb AI/Acre), or Oftanol® (2 lb AI/Acre).	Control thatch as recommended. Mid-April to May treatments prevent population buildup. Treatments include those listed for late winter.	Damage limited to sunny rather than shady areas spot or area treat damaged grass. Treatment for existing population include those listed for late winter.	Late summer applications usually make fall treatments unnecessary.
Billbugs	Treatment can be done now if adults are active. Diazinon[1] (4 lb AI/Acre) Dursban® (1 lb AI/Acre), Oftanol® (2 lb AI/Acre), or Triumph[1]® (1 lb AI/Acre), may be used.	Treat adults when they become active as recommended for late winter.	Treat billbug grubs with grub rates of Turcam®, Mocap® 5G, Triumph2® (if not used earlier), or diazinon[1].	Billbug grub infestations discovered now may be more difficult to control.
Grubs	Control with insecticides usually does not extend to new generation in late July and August.	Late March-early April treatments are only effective before pupation occurs. Treatment may include Turcam (2-4 lb AI/Acre), diazinon[1] (4 lb AI/Acre), Triumph2® (2 lb AI/Acre), or Mocap® (5 lb AI/Acre). Late summer treatments may still be required if reinfestation occurs.	New generation grubs present by late July-mid August can be controlled with Turcam® (2 lb AI/Acre), diazinon[1] (4 lb AI/Acre), Triumph2® (2 lb AI/Acre), or Mocap® (5 lb AI/Acre). For green June beetle grubs: use Sevin® (2 lb AI/Acre) Irrigate before treatment in hot, dry conditions.	Treatments are effective most years through Sept. Proxol® (8 lb AI/Acre) or Triumph2® (2 lb AI/Acre) are effective for late-season control.
Sod Webworm	Treatment is not appropriate at this time.	Warm season grasses out-grow moderate damage. Diazinon[1] (4 lb AI/Acre), Dursban® (1 lb AI/Acre), Proxol® (6 lb AI/Acre), Orthene® (1/3 lb AI/Acre), or Dipel® may be used when larvae are present.	Treat when larvae are present or two weeks after peak moth flight. Treatments include those listed for spring.	Treatment in early Sept. may reduce overwintering population.
Cutworms	Treatment is not appropriate at this time.	Apply insecticide late afternoon and do not irrigate immediately unless specified on label. Treatments include Dursban (1 lb AI/Acre), Proxol® (6-8 lb AI/Acre), or Sevin® (2-4 lb AI/Acre).	In the South cutworms are usually a spring problem. If summer infestations occur treat as directed for spring.	Treatment usually not necessary at this time.

A STRONG CASE AGAINST BOBCAT.

When you think skid steer loaders, you probably think Bobcat.

But let's push them aside for a moment.

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eastern Texas. Control costs have increased as the tawny mole cricket, one of the pest species, moved north and west.

The cost of controlling mole crickets in Florida usually exceeds $40 million annually. Florida turf managers, in cooperation with University of Florida scientists, have accelerated biological control efforts in a big way.

Nematodes to the rescue

Parasitic nematodes specific to mole crickets have been released at sites selected throughout the state. Evidence of mole cricket population suppression by these parasites has kindled hope for an effective biological tool for long range control of the Southeast's most damaging turf pests.

A two-year project just concluded in Alabama verified the importance of "knowing the pest" in development of control strategies for mole crickets.

Our project involved monitoring pest populations by soap flushing, mapping areas of overwintered mole cricket activity in early April, and treating only mapped areas later for the newly-hatching generation. Mapping in April accounted both years for 90 percent or more of the total area damaged by mole crickets through the whole season.

Timed applications

Tying treatment dates to first observable hatch—before damage became visible—resulted in effective control with lower than label rates of some insecticides. Thus, the combination of mapping and monitoring seed labor and insecticide costs resulted in more effective control.

Dr. Leon Stacey, turf consultant in Georgia, has also reported success with mole cricket mapping.

Heavy spring rains in 1989 brought an end to the drought in many areas, but provided a perfect environment for two-lined spittlebug development. Once a coastal problem, spittlebugs are now a major lawn problem in cities such as Atlanta and Birmingham—particularly in "wet" seasons.

Management practices, especially dethatching, play a major role in effective control of this pest, yet insecticides are still the backbone of our control efforts.

Newer and safer

New and safer formulations of existing products can be expected. Dustless granular insecticides, such as a new granular Mocap from Rhone-Poulenc, will be the result of new formulation technology.

Warm-Season*	Late Winter (Mar)	Spring (Apr-May)	Summer (June-Aug)	Fall (Sept-Oct)
Fall Armyworms	Treatment is not appropriate at this time.	Populations usually develop later during summer and fall.	Treatments are most effective in early morning or late afternoon. Use Dursban (1 lb AI/Acre), diazinon[1] (4 lb AI/Acre) or Proxol ® (6-8 lb AI/ Acre).	Apply as directed for summer. Fall armyworms are usually a greater problem in Sept. - Oct. than earlier.
Fire Ants	Treatments are less effective at this time.	One of the following baits: Amdro (1.5 lb bait/ Acre), ProDrone (.88 lb bait/Acre), Affirm (1 lb bait/Acre), Logic ® (1-1.5 lb bait/Acre), or Oftanol ® (.05 lb AI 1000 sq ft.) may be used for area treatment. Wait a week after bait application and treat existing mounds with a registered contact insecticide such as diazinon, Dursban or Orthene.	Treat mounds as reinfestation occurs with registered formulations of diazinon[1] or Dursban , or Orthene ® 75S dust (2 tsp/ mound)	Area treatments as described for spring may be done in heavily-infested areas. Apply controls for area or mound treatments early in the morning or late in the day. Irrigate before treatment if drought conditions exist.
Mole Crickets	Treatment of overwintered populations is optional in most areas, and does not substitute for summer treatment of nymphs. Tunneling at this time can be reduced somewhat with Orthene sprays (3.5lb AI/Acre). Rolling, fertilizing and irrigating warm-season grasses speeds recovery. *Map* areas of overwintered mole cricket activity for summer treatment of nymphs.	Monitor areas mapped in March or April weekly with soap flushes to determine when hatching. If hatching occurs in your area before June treat as recommended for summer.	Apply one of the following within six weeks after first observed hatch: Mocap ® (7.5 - 10 lb AI/Acre) Oftanol ® in areas where used less than two years (2 lb AI/ Acre), Triumph[2] ® (2 lb AI/Acre), Turcam ® (2 lb AI/Acre), or Sevimol ® (6-8 lb AI/ Acre). High pressure injection (1500-2000 psi) specialized equipment of Dursban ® (2 lb AI/Acre) can be done in states where labeling permits. Spot or area treat later in summer with Orthene ® (2.6-3.5 lb AI/Acre) or Dursban ® bait (75-150 lb bait/ Acre).	Spot treat with Orthene (2.6-3.5 lb AI/Acre) or Dursban bait (75-150 lb bait/acre) Triumph[2] ® (2 lb AI/Acre) is effective late season.
Two-Lined Spittlebug	Treatment is not appropriate at this time.	Treatment usually not necessary at this time. Dethatch turf when appropriate.	Mow, irrigate several hours or the day before treatment. Spray with diazinon[1] (4 lb AI/Acre) or in less thatchy turf with Dursban ® (1 lb AI/ Acre).	Treat infested areas as described for summer.

* Review accompanying text for details. Follow label directions for specific application instructions.

1 Diazinon may not be used on golf courses or sod farms.

2 Triumph is registered federally for commercial lawn applicator use. Triumph is also registered in some states (24c-Special Local Needs Labeling) for use on golf course tees, greens and aprons and sod farms meeting soil type requirements. Two pounds active ingredient may be applied annually, either as one application or two at 1 lb AI/Acre each.

Source: Dr. Cobb

New formulations of Triumph from Ciba-Geigy and fonofos from ICI are expected this year. Registration of new pyrethroids for turf insect control is also expected.

High pressure liquid injection of insecticides (1500 to 2000 psi) continues to be of interest to turf managers and researchers. This system, developed by Cross Equipment Co. of Albany, Georgia, injects material without slicing as nozzles move over the turf surface.

Advantages of this system include effective control of mole crickets and grubs with lower-than-label rates of certain insecticides and reduced surface residues. (In some states special labeling is required for insecticide application by high pressure injection equipment).

Southern turf in many areas now includes a variety of traditionally cool-season fescues and ryes. Those varieties that are endophyte-containing (plant within a plant) have long been known to be less damaged by surface-feeding insects.

Dr. Dan Potter of the University of Kentucky, reports results of tests in which certain endophyte-bearing grasses were less damaged by grubs.

During the past decade, southern turf insect problems have become more severe. To what extent the loss of organochlorine insecticides, increased turf quality, expanded pest ranges or the probable combination of factors is responsible, we can not say with certainty. What we can say for sure is that turf professionals have responded positively.

Continued restrictions

Restrictions on pesticides and pesticide use, and increased product

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costs have resulted in our examining our options more closely. Basic pest information has taken on new meaning as we learn more about how to manipulate cultural practices to disrupt pest life cycles.

New technology in product formulations, production of biological control agents, and application methods promises greater applicator and environmental safety.

In summary, Southern turf managers have and are meeting the challenge of cost-effective insect pest control by increasing their knowledge and expertise, supporting research and extension efforts, and through skillful planning.

In other words, it's the same important basic message: (1) Know all you can about the pest; (2) Know your control options; (3) Develop your strategy and time efforts effectively, considering long range as well as immediate effects.

The general information offered here is intended to assist the Southern turf manager with developing control strategies for common insect pests.

SPRING
(April-May)

Early April treatments of chinch bug and billbug adults may eliminate egg layers and reduce damage later in the season. Chinch bug treatments in May reduce the first nymphal (immature) population that is responsible for June damage.

Turf areas that don't "green up" need to be checked for grubs. If grubs are not in the pupa stage, treatment can be done, but may have to be repeated later in the summer if re-infestation occurs.

Mole cricket hatching begins in May in most areas. Infested turf should be monitored weekly with soap flushes (2 tbs. liquid dishwashing soap in 1 gal. water) in order to determine when first hatch occurs. Be sure to monitor late or early in the day, then flush area with plain water to avoid excessive turf "scalding" by the detergent.

Treatments to reduce spring tunneling are considered optional in most areas.

Sod webworm caterpillars that overwintered in turf usually pupate and moths emerge in April. Larvae usually hatch about two weeks after moth flights peak. Treatments to infested turf two to three weeks after moth flights peak can eliminate damage.

Cutworm moths often lay their eggs in aerification holes on golf greens in the spring. Larvae hatch and feed at night. Apply insecticides late in the day, and irrigate after treatment only if specified by the label.

Fire ants establish new colonies after rain on warm spring days. During this time fire ants are active on and near the soil surface. New mounds may not be visible above the turf for several days. Infested turf of an acre or more can be broadcast-treated with a fire ant bait.

Allow a week for foraging workers to pick up bait particles, then treat all visible mounds with a contact insecticide to eliminate workers. Treat mounds as re-infestation occurs.

This plan is usually less labor-intensive than simply mound-treating all season, and often results in less pesticide usage.

Ground pearl nymphs hatch during the spring, although treatment has not been shown to be effective. Healthy turf, including disease and nematode control, are important in preventing further damage.

Spittlebugs, once only a coastal problem, now damage turf in most areas of the Gulf states and Georgia. Nymph damage will first appear in June or July, according to Auburn's Dr. Pat Cobb.

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SUMMER
(June-August)

Chinch bug damage usually first appears in dry periods of June. During wet seasons, chinch bug damage is less severe. Billbug grubs are in the soil, and can be treated in June. Check turf areas where adult billbugs were active in the spring.

Adults of most grub species peak in June and "new generation" grubs are usually present by mid-August. During the drought years beetle emergence was delayed, and grub survival less.

August grub treatments may need to be preceded by irrigation if drought conditions exist. The moisture moves the grubs closer to the surface and contact with the insecticide. This does not replace irrigation after treatment.

Green June beetles emerge over a long period during summer and the grubs may have to be treated in some areas more than once. Remember, lower rates are usually very effective in controlling green June beetle grubs. However, the fact that the grubs surface to die is a nuisance in itself.

Mole crickets can be effectively controlled in most areas during June and July. Later treatments become less effective. Residual treatments are most effective if timed within six weeks after first observed hatch.

Sevinol sprays are effective on newly-hatched nymphs. Baits are most effective in most areas from July through August. Orthene sprays are usually most effective after six to eight weeks from first observed hatch.

Pre-treatment irrigation is a "must" because it encourages mole cricket activity nearer the soil surface.

Sod webworms may damage warm season grasses severely during late June through August. Infested turf should be treated two weeks after peak moth flights in order to control hatching larvae.

Tropical sod webworms can be controlled best with registered formulations of *B T.* (Dipel).

Area treatments for fire ant control can still be effective in June unless drought conditions exist. Mound treatments are most effective if timed early or late in the day. Spittlebug damage from nymphs feeding deep in the turf is usually first noticeable in June and July.

The progression of symptoms resembles chinch bug damage-yellow spots that brown and die. Unlike chinch bug damage, yellow spots from spittlebug feeding usually first appear in shady areas. Within these areas masses of "spittle" containing cream-colored nymphs can be found deep in the turf.

Adult spittlebugs are especially attracted to Japanese hollies, and may move from these shrubs to the turf. All common warm-season turfgrasses are susceptible to damage, and damage was also reported on lawn fescue in 1989.

Fall armyworms are reported along coastal areas by late June or July most years. Bermudagrasses are preferred, although damage is usually not permanent.

Grasses infested with ground pearls should not be allowed to suffer from drought stress. These scale insects contribute to the decline of turf that is further stressed by such factors. Ground pearl treatments have not been effective.

FALL
(Sept.-Oct.)

Control in the fall is often complicated by such factors as hot, dry, conditions; slowed turf recovery; and larger, more difficult-to-control insect pests.

Sob webworms and fall armyworms are best controlled earlier in the fall. Overwintering sob webworm larvae are extremely difficult to control in late September and October.

Treatment of overlapping generations of thatch-dwellers such as chinch bugs and spittlebugs may result in less effective control of existing populations.

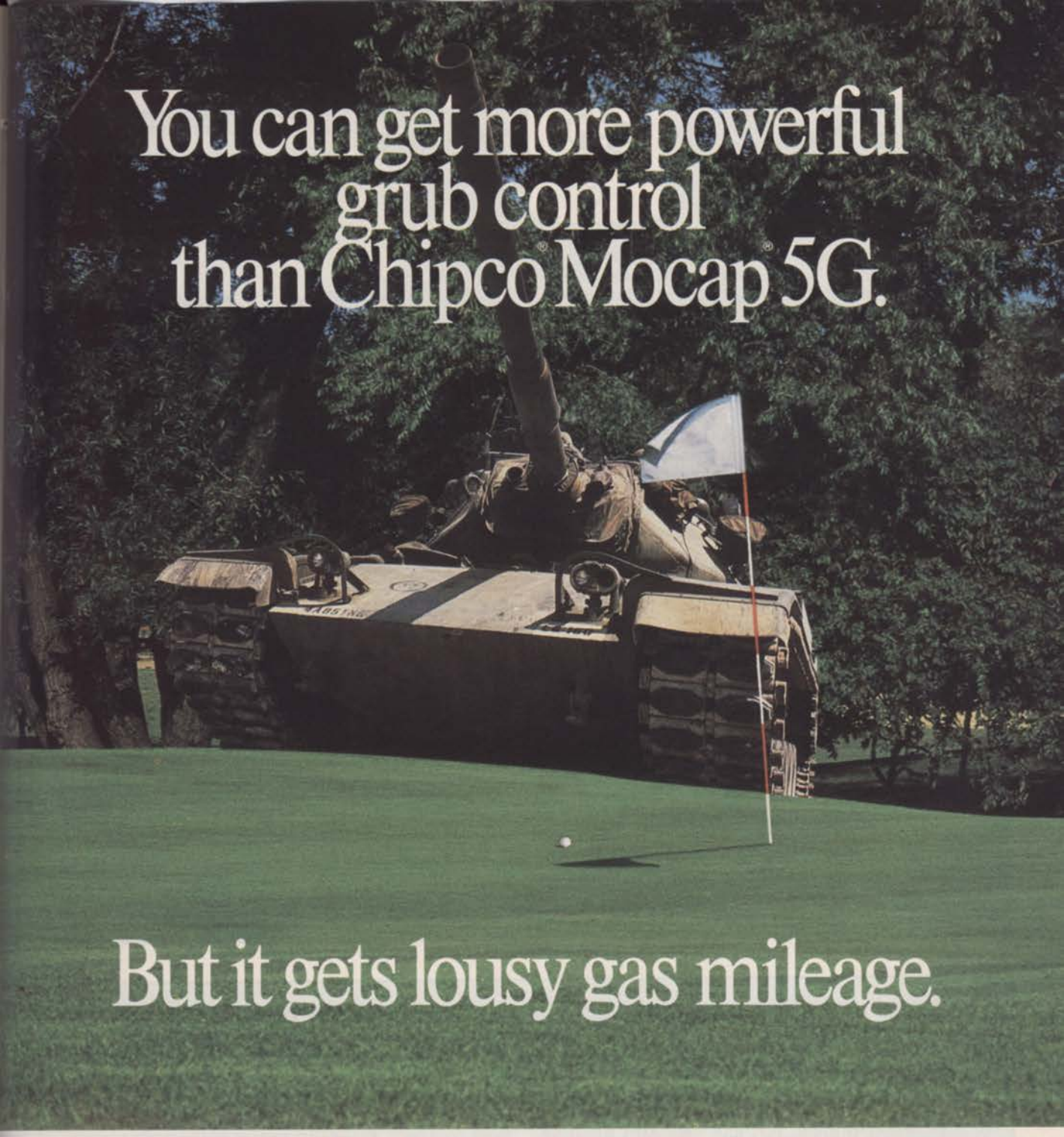
Soil insects such as grubs, mole crickets and fire ants are less active near or on the soil surface during dry fall weather. Irrigating turf before and after treatment can be essential for effective control.

Mole cricket dispersal flights take place in the fall. This complicates fall treatment, and spot treatment with Orthene or Triumph (where label permits) may be necessary.

Once rains begin, use baits, followed by mound treatments, in areas heavily infested with fire ants.

Areas that are heavily infested with fire ants require broadcast treatment, the author says.

You can get more powerful grub control than Chipco® Mocap® 5G.



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LATE WINTER
(Nov.-Dec.)

Billbug and chinch bug adults may become active in March some years. Chinch bugs prefer varieties of St. Augustinegrass (except Floratam in most extreme southern areas). Billbugs prefer zoysias and bermudagrasses.

Treat infested turf during mid-day when chinch bug and billbug adults are most active. Treatment at this time can prevent population build-up and turf damage in June and July.

Late season reinfestation may occur from unmanaged areas. Evidence of "varmint" digging-armadillos, skunks, raccoons-may indicate grub or mole cricket activity. Generally, treatment at this time is "second best" for these pests.

Grubs often reinfest the same areas, and can be effectively controlled in the smaller, more susceptible stage in middle to late summer. Mole cricket nymphs are easier to control in June than the overwintered nymphs and adults are at this time.

New technology promises greater applicator and environmental safety.

Areas of grub or mole cricket activity can be "mapped" now and targeted for monitoring and treatment later. Warm season grasses usually recover from spring damages. Grub-infested cool season grasses may have to be treated before grubs pupate in order to reduce further damage before the turf enters summer dormancy.

Usually, Mole cricket mating flights begin in March.

LM

More than $40 million is spent annually on mole cricket control in Florida. Still, late-season damage remains a common site on southern landscapes.

Cultural practices are important weapons when battling insects

The following is a brief look at several cultural practices you can employ to reduce pest populations in turf areas.

Dethatching: Follow extension recommendations for specific turfgrasses. Thatch control increases movement of insecticides through turf and decreases moisture, which is essential for spittlebug development.

High pressure liquid injection: HPLI (1500-2000 psi) is a new technique whereby lower rates of certain insecticides are being used to control mole crickets and grubs with reduced surface residues.

Mapping: Initially done for grub treatments in northern Alabama, this procedure has also proven successful in reducing area treated and pesticide usage in mole cricket control. Areas of overwintered populations are located and marked on a map of the turf site (such as golf course fairway maps, lined football fields and home plant profile map). These areas are then treated when the more susceptible "new generation" insects are present, before visible turf damage appears.

Monitoring: This procedure is designed to verify the presence of certain pests or pest stages. Examples include soap flushes, which can be used to detect the presence of cutworms, fall armyworms, sod webworms, mole crickets and green June beetle grubs. Flushes are best done in late May. Irrigate the area afterward to prevent scalding.

Another method is to cut a square foot of sod on three sides, fold back, shake turf and count the grubs present.

A third practice is to cover a plug of turf with water and count the chinch bugs that float to the surface.

Plant selection: Choose plant varieties that are less-susceptible to insects present in your area. For example, chich bug-resistant varieties of St. Augustinegrass, endophyte-infected fescues and ryegrasses resistant to surface feeders. Japanese hollies planted near centipedegrass lawns make an ideal setup for spittlebugs. Choose a "less-deadly" combination.

Pretreatment irrigation: Soil insect pests including grubs, mole crickets and fire ants are more active in moist soil. Watering *before* treatment of mole crickets is essential. Watering before grub or fire ant treatments during drought can improve control. These pests move closer to the surface in response to moisture and therefore make contact with the insecticide.

—Dr. Cobb□

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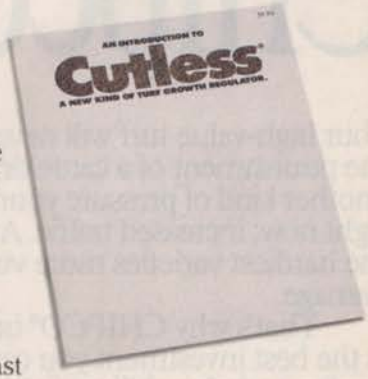

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mentals, you can depend on it to keep all the grounds you care for healthy and disease-free.

Add the fact that CHIPCO® brand 26019 fungicide is available in two convenient formulations—wettable powder and smooth-pouring flowable—and it's easy to see why it has become the disease control of choice for quality-conscious superintendents across the country.

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Lawncare operators in the Northeastern United States are likely to see more gray and pink snow mold this spring. Heavy winter rains and mild temperatures are to blame (photo courtesy of DowElanco).

IN WINTER'S WAKE

Depending on where you live, winter gave you a good head start or added a few wrinkles to your spring regimen. So what else is new?

by Will Perry, managing editor

One of the most unique aspects about companies in the green industry is that they can have so much *and* so little in common. While all seek the most lush turf, the healthiest ornamentals, and the most desirable landscape, the methods and species used to achieve each vary greatly.

The point becomes particularly obvious this month when companies coast to coast roll up their sleeves to tackle their clients' properties. In some parts of the country, Old Man Winter rolled out the red carpet by providing mild temperatures and adequate moisture. Yet in other areas, he's set the stage for adversity by holding back much-needed snowfall or dumping heavy rains.

LANDSCAPE MANAGEMENT talked to lawn care operators (LCOs) across the country to see whether the weather was friend or foe this winter.

Too much, too little

The two areas of the country that seem to have felt the greatest impact from this year's winter did so for opposite reasons. In the Great Lakes/Northeast region, excessive moisture during January and February have increased the likelihood of disease problems, while in the coastal Southwest the lack of rainfall has fueled concern about water rationing programs returning this spring.

The winter in the Northeast was characterized by heavy rains and mild temperatures. Consequently, LCOs there are expecting gray and pink snow mold problems, especially on perennial ryegrass and annual bluegrass in low-lying, shaded and/or poorly-drained areas.

"We did see a lot of pink snow mold, especially in areas where the snow lingers on and doesn't melt quickly," says John Bria of Alpine Lawn Care in Brewster, N.Y., after conducting initial site surveys in late February. "It can cause a problem with the first scheduled pre-emergent treatment because a lot of landscapers plan seeding at this time. We have to be especially careful when we go out in April with our pre-emergents or our efforts will be counter-productive. We're going to have to be aware of where they're doing their seeding."

Bria recommends treating snow mold mechanically. "We physically rake the areas out. It usually doesn't take much physical effort. Then we just broadcast seed with something high in perennial ryegrass."

In nearby Venetia, Pa., Pat Raffaele, co-owner of Lawn Management, Inc., offers similar suggestions to her clients with snow mold problems. "We suggest they rake it, thereby avoiding fungicide treatments. You don't always need them. We would rather see people do things culturally and spend their dollars on aeration and liming instead of fungicide treatments."

Raffaele is one of several LCOs to note that customer education campaigns about the benefits of aeration are reaping springtime dividends. She says that 70 percent of her clients receive aeration annually.

"A good number of our clients are members of country clubs so they're familiar with aeration and its benefits," she notes. "Some clients are interested in aeration twice a year. For them we also offer fall aeration in

On Some Lawns, Grubs Just Aren't a Problem.

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combination with liming." Raffaele points out that her competitive price for aeration, $10 per 1,000 sq. ft., is attractive to customers.

Bria said he prefers fall aeration because root activity is greatest then. For his clientele, aeration's expense makes it a luxury item.

Selling aeration

"We promote aeration the way it ought to be promoted," says Bria. "If you have a thatchy turf that is definitely cause enough to incorporate aeration. We do not push the issue on a lawn that may not need it. It's just something we offer when we encounter a lawn that has serious problems with thatch. We do not market it as an alternative to chemical applications because it isn't an alternative."

Norman Culbertson of Agreen Lawn Service, Inc. in Mt. Morris, N.Y., will do some aeration this spring but more in the fall. "I'm still not convinced that we don't let crabgrass come up through those doggone holes," says Culbertson. "People say no but I'm not convinced that's true."

Culbertson was pleased to report that public outcry over chemical use has been negligible this winter. "There's not quite as much controversey as far as chemicals go. I think that will make things easier," he says.

Transition zone

Last year lawn care operators in the transition zone enjoyed weather conducive to good turf growth, except some summer heat and humidity that brought on significant brown patch problems.

The transition zone underwent an unusual winter in '89-'90 however, as severe low temperatures in December gave way to near record-high temperatures in January and February. The overall mild winter allowed tall fescue to green up earlier, which sent crews into the field two to three weeks ahead of schedule.

"The grass is actually growing now [March 1], a full month ahead of schedule," reports Clarence Waskey Jr., of Lawn Doctor-Chesterfield in Richmond, Va. His first of two spring pre-emergent applications was already under way, yet it all evens out in the end. "We didn't get a lot of fertilization done until early January because of the heavy snowfall we got in early December," he adds.

Early green-up

"We've had bermudagrass greening up now since February, which is entirely too early," says Barry Wynn, president of Wynn's Intensive Lawn Care in Winston, Ga. "We don't have any problems with that. It would be just fine if we didn't get another frost. But each time it kills the grass it makes it that much thinner when it finally does come in. We already have a lot of people calling, wanting us out there and we have to try to get to them."

Turf in the transition zone, particularly bermudagrass and zoysiagrass, may experience some late-winter frost damage, says Wynn.

"There's nothing we can do. We try to watch our nitrogen applications this time of year. Once we feel it has finally warmed up we go back in there with a healthy application of nitrogen."

LCOs say the amount of aeration they perform is directly related to how well they educate customers.

Tim Haines' National Turf, Inc. employees were in the field by mid-February instead of the typical March 1 start. His Newport News, Va.-based company has promoted semi-annual aeration for the past 16 years as an environmentally sound method of reducing the compaction problems associated with the area's heavy clay soils.

"When I take on a client they understand that their lawn is mine," says Haines. "All they have to do is water and mow it and we take care of the rest."

Haines prefers slice and spoon aeration to core aeration because the former leaves the turf looking better. Total lawn renovation, when needed, is also recommended in the spring, says Haines.

Northwest and Plains

Reports from the Great Northwest and Plains states indicate that the winter of '89-'90 appeared "normal." At presstime, there were mild concerns about a lack of moisture, but many felt late-season snow and rains were likely.

"It's been dry, but hopefully it will catch up this spring with a big wet snow," says Richard J. Arnwine of Nitro-Green Professional Lawn and Tree in Casper, Wyo. "That's usually what happens in Wyoming. We don't have a whole lot of snowpack as far as I can see, but it's not a crisis yet either.

"We'll just have to do the best we can. As far as moisture content goes, it's always a problem but last year it got to be serious for a bit and then we got some rain. That's one thing about dealing with the weather...you don't have any control over it."

Brad Culver, of Nitro-Green in Helena, Mont., says the disease activity that posed problems last year aren't expected this spring.

"We'll have to wait and see and then adjust.

"You know last year we had so much snow and cold weather that we were really late getting started. And with all our add-on services like maintenance, power raking, and the like, we were way behind," says Culver. "But I think this year we've got spring weather early."

Culver says customer education and the lack of topsoil in Montana has made aeration "a big service" for his company. "The spring months are big ones for aeration. It's steady all through the summer months."

Southwest drought

In the Southwest, concerns about inadequate rainfall remain. While water levels were described as "normal" in Arizona, southern California LCOs said a third year of light winter rains will make spring water rationing likely.

For the second straight year, the skies above El Paso denied rainfall to the bermudagrass below. "We haven't had a decent rainfall since last June, but that's typical for us," says Vern Autry of Treelawn Corp. "The good 'ol common and hybrid bermudas will handle that."

Renovation is a year-round project, said Autrey, except for the hottest summer periods. "We're trying to get people to cut down on the size of their lawn, which is why we're into landscape renovation as well," he added. "We want them to get in some extra brickwork or drought-tolerant shrubs, things of that type."

It appears that yet again the green industry is defying age-old cliches. We talk about the weather *and* do something about it! **LM**

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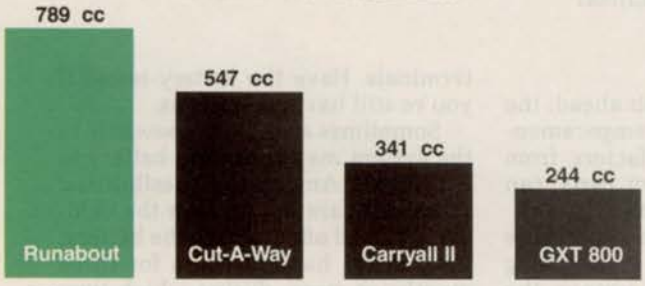

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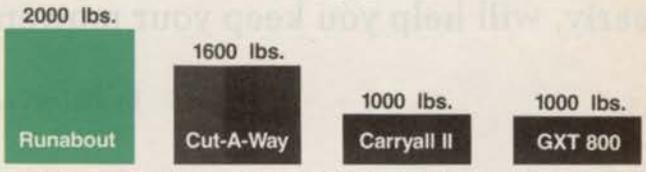

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Using proper weight oil in mowers prevents excessive oil consumption, a symptom of which is blue smoke blowing from the exhaust during mowing.

REDUCING MOWER DOWNTIME

Proper maintenance, combined with the ability to recognize danger signals early, will help you keep your mowers out of the shop and out on the grass.

by Robert L. Tracinski

While most lawn care specialists probably don't think of themselves as mechanics, even the best in the business are only as good as their equipment. Engine trouble, poor performance and equipment that's just not doing the job can mean frustration and lost profits.

Some of the most common mower problems involve basic operational systems like the engine or transmission; others may affect the end result, such as an uneven cutting job. Whatever the situation, you don't have to be an expert mechanic to deal with it. By learning to recognize and correct routine mower problems quickly and efficiently, you can devote more time to the productive work—lawn care.

With a big mowing job ahead, the last thing you need is a temperamental engine. A variety of factors, from weather changes to worn parts, can contribute to hard starting.

Your first task is to determine whether you're getting a spark. Using insulated metal pliers, remove the spark plug and touch the threaded area of the plug to a metal surface on the engine. Turnover the engine and look for a blue spark. If you don't have a good spark, the problem may be in the ignition or electrical system.

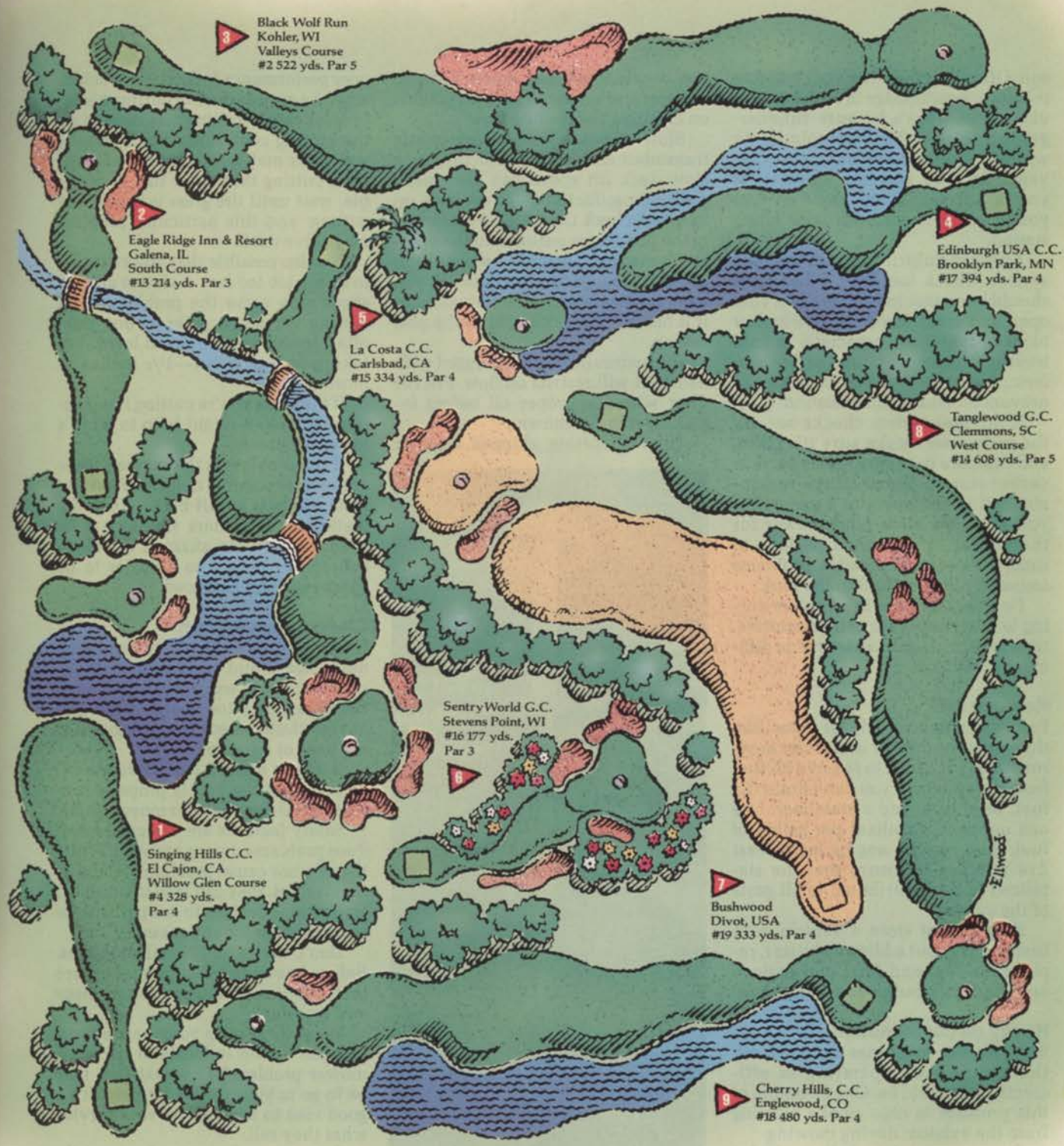
First try replacing a worn or corroded spark plug with a fresh one. Next, take a look at the battery condition. Check the electrolyte levels, add water if necessary, and clean the terminals. Have the battery tested if you're still having problems.

Sometimes a problem elsewhere in the system may cause the battery to run down. Among the possibilities: accessories are left on after the vehicle is turned off, draining the battery; the vehicle has been idle for three months or more, during which time the battery has deteriorated; battery cables or connections are heavily corroded, leading to voltage seepage.

If you do get a good spark after testing the spark plug, the problem may be in the fuel.

Fuel problems

Be sure you're using fresh fuel with an alcohol content of less than 10 percent, and the right blend for the sea-



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NORTHRUP KING

son. Often, engines that start just fine in winter won't budge in summer, and vice versa. That's because summer-grade fuel can be less volatile in winter, while winter blends can cause vapor lock in warmer weather. If you're not sure what blend of fuel you're using, check with your filling station.

Another culprit may be the fuel system. Check fuel flow. Pulse lines should be connected and the fuel vent open and clear. Look for pinched or blocked fuel lines, especially in cold weather when moisture or ice can form; keep the tank full in winter to prevent moisture condensation.

If the fuel system checks out, try the carburetor. Make sure it's clean, and compare the adjustments on your carburetor to the settings recommended in the operator's manual. If you routinely store your mower for the winter or extended periods of time, be aware of possible problems caused by leaving fuel in the tank.

Fuel that remains in a vehicle during long-term storage can deteriorate, turn to varnish and cause engine difficulty or damage.

Remove fuel

Before storing a vehicle for more than three months (or less in warmer environments), it's best to remove all fuel from the system. If you don't drain the fuel, be sure to add a stabilizer. Use one ounce of stabilizer per gallon of fuel, then run the engine for at least five minutes to insure that the stabilized fuel is distributed to all parts of the system.

If you must store a vehicle with fuel and without adding stabilizer, replace the fuel and filter and remove and clean the carburetor before use.

Heavy oil consumption

If the mower consumes too much oil, the engine isn't operating as efficiently as it could be. One symptom of this problem is blue smoke blowing from the exhaust during mowing.

Overconsumption of oil usually indicates an engine problem. If you suspect this is the case with your mower, use the following checklist to identify the specific engine problem:

Oil level is too high. Drain off the excess and keep an eye on the level in the future.

Improper weight oil being used. Review the operator's manual for recommended weights for summer and winter operation.

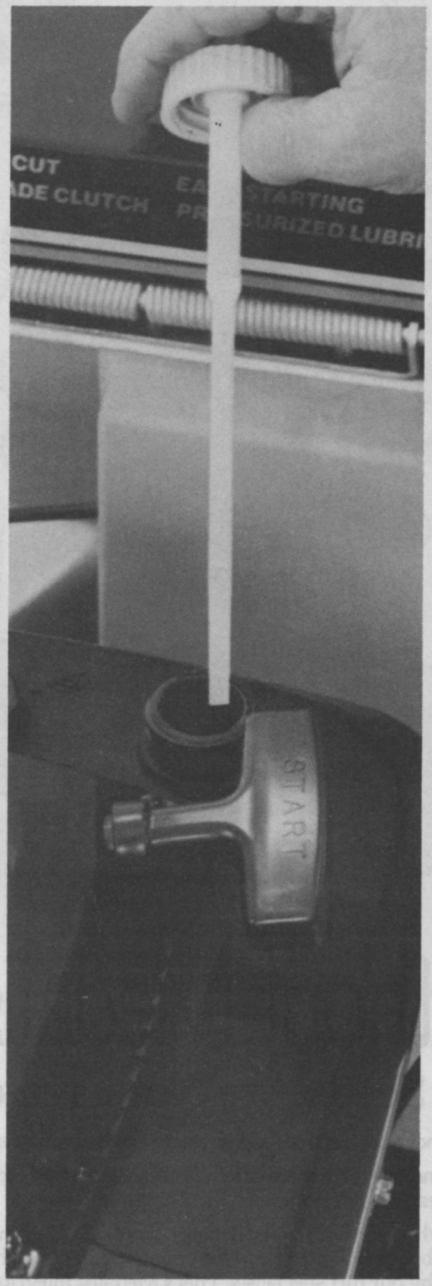
Operation of engine above recommended speeds causes oil to foam. Follow guidelines for engine operation in the operator's manual.

Overheating engine thins the oil and causes it to break down. Refer to the operator's manual for instructions on cleaning the cooling fins.

Slow response from a hydrostatic transmission, steering difficulty or a slow deck lift speed can also mean reduced productivity. To get back up to speed, check the oil level according to the procedure outlined in the operator's manual. Check for moisture in the oil. Change the oil filter if you have problems with contamination or if it has not been changed in the past season.

If a hydraulic filter is plugged with debris, it will restrict oil flow. Fill the filter with the proper oil before installing it in the mower.

Uneven cutting, skipped areas or poor performance indicates a problem with the mower deck or cutting blade. In some cases, striping may depend on the cutting conditions. For example, wet grass may be more prone to uneven cutting than drier turf. If possible, wait until the grass is dry before cutting, and this particular problem may solve itself.



Maintain the mower's proper oil level. Drain excess before operation.

It's also possible that you're trying to do the job too fast. A slower ground speed may solve the problem. Also, cutting too much grass at one time often results in an uneven lawn. Try taking less of a cut—1½ inches at most.

If the grass you're cutting is exceptionally fine, it might help to go to a lower lift blade.

If the problem is the mower, there are several possible culprits. First and most likely is a dull blade. Keep the blade sharp; corners should not be rounded. You can sharpen the blade yourself or take it to a dealer to be sharpened and balanced.

Cleaning underneath

Keep the underside of the mowing deck clean, and inspect it to make sure that it isn't warped or distorted. If the deck has a toe guard at the discharge chute, check that the guard is not bent or damaged.

If you're using a belt drive model, be sure that the belt is properly tensioned and that the idler moves freely.

Safety features are designed to reduce problems during mowing. While they do not cause problems in and of themselves, they can lead to trouble if an operator decides to tamper with or remove them for any reason.

Don't invite additional problems. Before mowing, always make sure that safety mechanisms are in place and working.

What if, despite your best efforts, you can't seem to locate or correct a mower problem? The next step may be to go to your dealer for help. It's a good idea to use dealers who service what they sell.

Some manufacturers have established a "hotline" service which allows a dealer to call the manufacturer, describe a problem and get an answer in one phone call. In any case, your dealer should be able to assist you in solving the problem.

It doesn't take an expert mechanic to keep equipment up and running and business at its best. Learn to identify common mower problems, correct the trouble at its source, and get back to business. **LM**

Bob Tracinski is consumer information manager for John Deere & Company.

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Now! Affordable post-emergent control of

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plus the broadleaves you get with Trimec®

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New free-flowing formulation: Active ingredients are in a stable, uniform suspension that is as easy to work with as any other Trimec Complex.

Everett Mealman
President
PBI/Gordon Corporation

"Sometimes things are so obvious that they take you by surprise." No, that's not Yogi Berra double talk . . . It's the essence of what so many of our turf friends said when they sampled Trimec Plus last year.

Listen to Sandy Queen, Certified Superintendent of Golf for the city of Overland Park, Kansas. "The minute I read the Trimec Plus label, I said to myself, Hey, this will work! I just know it will!"

It was in August of 1988 when Sandy saw the Trimec Plus label and the first thought that came to his mind was to test it against a $250.00-a-gallon post-emerge he had already purchased to use on the goosegrass of a newly seeded driving-range tee at the Overland Park Golf Course.

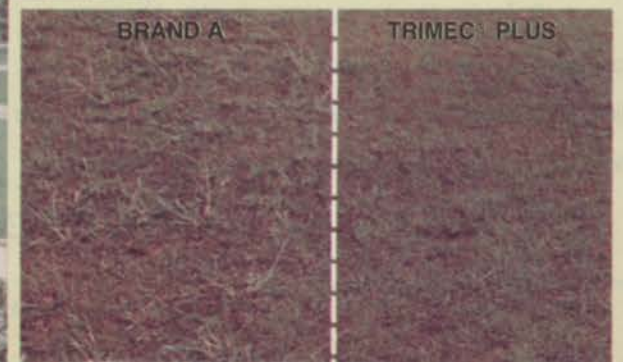
"You remember the weather last year," said Sandy, "so you won't be surprised to learn that, even though a pre-emergent had been used, the tee was loaded with goosegrass and crabgrass. We sprayed half of it with the super expensive exotic and the other half with Trimec Plus, which I believe costs $27 a gallon and, based on the rates we used, cut our cost per acre in half.

"The super expensive exotic only got the young goosegrass. It did virtually nothing on the mature plants. But that one application of Trimec Plus virtually cleaned out all the grassy weeds as well as a good deal of yellow nutsedge that was also immune to the more costly treatment."

We'll tell you what Sandy Queen saw on the Trimec Plus label that made him so sure it was a winner, but first, here are a few more comments from your peers.

Works with no burning or discoloration

Russell Kestler, who owns Rus-



Below is a polaroid showing the goosegrass control of brand A, vs. Trimec Plus. At left in photo is August Leitzen, Superintendent of Overland Park Golf Course, with Sandy Queen, Certified Superintendent of Golf for the city of Overland Park, Kansas.

1) Tom Tomlinson, left, of Lawn Doctor in Trumbull, West Redding, Connecticut with two of his drivers, Gary Schwarz (center) and Matt Werthmann. Tomlinson reports excellent results with Trimec Plus on yellow nutsedge.

2) Russell Kestler, of Russell's Landscaping, Malverne, N.Y. Kestler used Trimec Plus to control crabgrass in 85° temperature with very good results and no burning or discoloration.

sell's Landscaping of Malverne, New York out on Long Island, said, "We used Trimec Plus last season on approximately 140,000 sq. ft. of residential turf that was loaded with crabgrass. We got excellent results with just one application — and there was no discoloration or burning of the turf, even in August."

Tom Tomlinson of Lawn Doctor in West Redding, Connecticut used it on over 40 lawns last year to clean out yellow nutsedge and crabgrass. "The results were excellent," said Tomlinson. "Trimec Plus totally cleaned up an unusually heavy infestation of nutsedge and crabgrass in spite of erratic and difficult weather conditions, and in most instances only one treatment was needed.

"And guess what," continued Tomlinson. "Trimec Plus also cleaned up our clover problems."

After listening to Tomlinson, we almost think we should have named our new herbicide Trimec Plus-Plus-Plus: nutsedge *plus* crabgrass, *plus* broadleaves, *plus* economy.

Why Trimec Plus is so efficient

Now, back to what Sandy saw on the Trimec Plus label that got his enthusiasm up — it was MSMA as an ingredient in a new Trimec Complex. As a Certified Superintendent of Golf, Queen is quite naturally a dyed-in-the-wool user of Trimec and, of course, he has had extensive experience with MSMA.

He knows that MSMA is surely one of the most effective herbicides for use on grassy weeds and sedges, but that it has a major flaw. To get enough of it into a grassy weed to kill it requires repeated applications, or so much of a wetting-and-penetrating agent that burning and discoloration will occur.

And he also knows that Trimec has a unique eutectic characteristic that gives it unparalleled penetrating power.

A new Trimec Complex

So, when MSMA is locked into a Complex with Trimec — which is precisely what Trimec Plus is — you have a superior system for delivering the MSMA to grassy weeds such as crabgrass, dallisgrass, barnyardgrass and nutsedge — and, of course, the delivery system itself, Trimec, is the undisputed number one post-emergent broadleaf herbicide for ornamental turf in all the world!

Trimec plus MSMA. But, wait! Remember that word, *Complex*.

Trimec Plus is not a tank mix of Trimec and MSMA. Trimec Plus is a specially compounded amine complex of 2,4-D, MCPP, Banvel® and MSMA . . . in a stable, uniform suspension that is as easy to work with as any other Trimec Complex.

You'd have to buy at least two or three other herbicides to do all of the things that Trimec Plus, alone, will do — control crabgrass; control yellow nutsedge; control the widest spectrum of broadleaves.

Sprayer offer: For details on how you can receive a $100-value SP-1 Back-Pack Sprayer for only $35 when you buy Trimec Plus, call our Sales Service Department.

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Circle No. 149 on Reader Inquiry Card

725-489

NOZZLE SELECTION MAKES THE DIFFERENCE

Reducing coverage gaps, chemical costs and drift are just some of the many benefits reaped from choosing the right nozzle for your sprayers.

by Steve Pearson, Ph.D.

Turf chemical sprayers, even when operated by the best people, are only as effective as the nozzles along the boom. Selecting the best nozzles for your particular chemicals and your application conditions is the key to safe, effective and profitable chemical use.

Can you afford gaps in the coverage of your turf chemical applications? Can you afford to have streaks from over-applied chemicals? Can you afford to have your chemicals drift off target and damage ornamental plantings? In almost every case your answer has got to be a definitive, No!

Nozzle selection

In the 1990s, it's more important than ever to assure that every chemical application is as accurate as possible. Budgets are being stretched, demand for high quality turf increases and environmental concerns are near an all-time high. Fine-tuning nozzle selection to the specific chemical and specific application situation will increase spraying accuracy, reduce chances of off-target movement of chemicals and save you time and money by getting chemical applications right the first time.

The most important thing to remember about spraying is that not every nozzle is ideal for every application situation. The nozzles you select for each chemical application need to be evaluated for their effectiveness and uniformity. Both of these characteristics must be matched against the specific application situation and the requirements of the chemical being applied.

The spray pattern is the most obvious differences between nozzles.

continued on page 60

For applicators who maintain susceptible plants near turf areas or who have environmentally sensitive areas nearby, chemical drift should be a primary concern.

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CHART 1.

Nozzle selection for boomed sprayers

Nozzle Type	HERBICIDES		INSECTICIDES		FUNGICIDES		GROWTH REGULATORS
	Contact	Systemic	Contact	Systemic	Contact	Systemic	
Wide-Angle Full Cone		Excellent		Excellent		Excellent	
Extended-Range Flat Fan	Excellent	Good	Excellent	Good	Excellent	Good	Excellent
Standard Flat Fan	Good		Good		Good		Good
Wide-Angle Hollow Cone		Good		Good		Good	
Twin Flat	Excellent		Excellent				Good
Flooding Nozzles		Good		Good		Good	

NOZZLES *from page 58*

Spray patterns are a result of the way liquid leaves the nozzle. Terms like flat spray, flooding nozzle, full cone or hollow cone are typically used to describe patterns.

Spray pattern

Each nozzle pattern has a specific range of droplet sizes and specific type of coverage. Some nozzle patterns are more uniform, others offer finer droplets and some have both. Within each nozzle type there are various flow rates and operating pressures that influence the droplet size.

In addition to nozzle spray pattern, droplet size is a critical factor in most chemical applications. Selecting the optimum droplet size is often a balance of coverage versus drift. In many turf applications, uniform coverage of the target is vital.

The smaller the droplets, the more drops per square foot and the better the coverage. These small droplets, however, are easily effected by environmental conditions (like wind speed, temperature and humidity).

For applicators who must maintain susceptible plants near their turf areas, who have open water or environmentally sensitive areas nearby, chemical drift should be of concern.

Since chemical application can't always be limited to days when weather conditions are prefect, nozzle types that minimize drift are very important. Generally speaking, the higher the spray volume per 1,000 square feet and the lower the pressure, the larger the droplets and the smaller the chance that the droplets will drift-regardless of the nozzle type used (see chart 1).

Wide-angle nozzles

Wide-angle full cone nozzles provide a uniform, circular pattern at pressures from 15 to 40 psi. Droplets are larger than other nozzle types of the same capacity, making wide-angle full cone nozzles a good choice to reduce drift.

Wide-angle full cone nozzles are typically operated at pressures of 15 to 25 psi. At lower pressures, these nozzles produce excellent target coverage and uniformity along the boom. Lower operating pressure also results in less wear on pumps and valves.

When mounted at a 45 degree angle, wide-angle, full cone nozzles provide an excellent balance of uniform distribution and drift control.

Nozzle spray pattern and droplet size are critical factors in chemical applications.

Wide-angle full cone nozzles provide excellent coverage for all systemic pesticides. When used to apply contact pesticides, these nozzles are often used with larger spray volumes to improve coverage of the target (see illustration 1).

Flat fan nozzles

Extended-range flat fan nozzles produce a tapered pattern similar to standard flat fan nozzles but are designed to operate over a wider range of pressures. The recommended pressure range for extended-range nozzles is 15 to 60 psi compared to 30 to 60 psi for standard flat fan nozzles.

Standard flat fan nozzles are good for applying all contact pesticides and growth regulators. The lower pressure capability makes the extended-range tip excellent for systemic pesticides as well as contact pesticides and growth regulators.

The nozzle is a good choice for drift control since it provides uniform coverage at pressures as low as 15 psi. The nozzle is also ideal for sprayers equipped with automatic sprayer controls since it allows a wider range of operating pressure without changing the spray pattern.

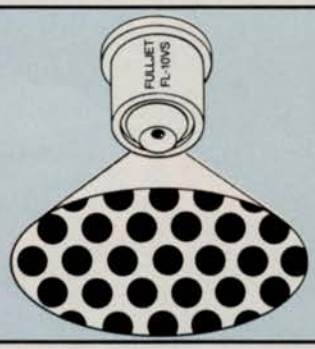
Extended-range nozzles can also

(TEEJET)

Illustration 1

Spray pattern: The wide-angle full cone nozzle has a circular pattern of relatively large droplets and is designed for pressures from 15-40 psi.

Best application: When used at 15-25 psi, wide-angle full cone nozzles are an excellent choice to reduce drift with systemic pesticide applications. At these lower pressures, these nozzles produce excellent target coverage and uniformity along the boom. Lower operating pressure results in less wear.



(XR TEEJET)

Illustration 2

Spray pattern: Flat fan nozzles produce medium sized droplets within a tapered pattern which is ideally suited for overlapping along the boom to achieve uniform broadcast coverage. Extended-range nozzles are designed to operate over a wider range of pressures than standard flat fan nozzles (15-60 psi for extended-range and 30-60 psi for standard flat fan nozzles).

Best application: Excellent for applying contact and systemic pesticides as well as growth regulators.

When good shots end up in bad lies on dollar spotted fairways, it can spot your course's reputation.

That's good reason to put Rubigan® in play. Dollar for dollar, nothing controls dollar spot better.

Just one Rubigan application controls even resistant strains of dollar spot for up to 28 days. And one case of Rubigan will treat up to 8 acres of greens and fairways.

Rubigan is the only fungicide labeled to treat and prevent all these other turf spoilers, too: Fusarium leaf spot, necrotic ring spot, summer patch, take-all patch and spring dead spot—plus large brown patch with a Daconil 2787® tank mix.

Keep your fairways, tees and greens dollar spotless—looking clean and beautiful all season long. Get Rubigan from your Elanco distributor. Or call toll-free: **1-800-352-6776.**

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Circle No. 119 on Reader Inquiry Card

DELAVAN RAINDROP

Spray pattern: Delavan's Raindrop nozzle has a wide-angle (120°), hollow-cone spray pattern and is designed for drift reduction. Its patented swirl chamber produces fewer driftable "fines", as less than one percent of the spray volume consists of droplets under 200 microns.

Best application: Raindrop nozzles should be positioned at a 45° tilt for a uniform spray pattern. Also, spray should overlap 100 percent for most consistent coverage. Pressures should be 30 to 40 psi.

Illustration 3

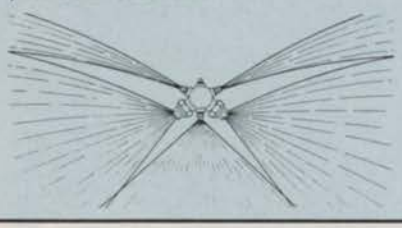
(BOOMJET)

Spray pattern: Boomless nozzles use a combination of up to five nozzles to produce an overall wide swath flat spray. These nozzles should be 100-percent overlapped on successive passes to achieve uniform distribution. Boomless nozzles can be used at pressures from 20-40 psi and achieve swaths of 30-60 feet when mounted at three feet off the ground.

Best application: Boomless nozzles are a good choice when terrain or obstructions make boom sprayers impractical. Spray

Illustration 4

distributions are not as even as a properly operated boom sprayer. Boomless sprayers should be operated at the lowest pressure possible to reduce drift.

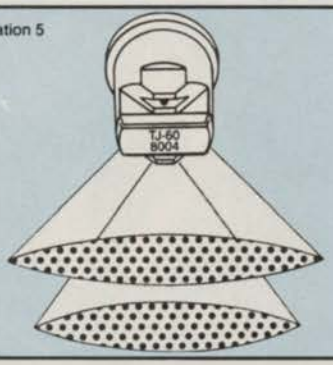


(TWINJET)

Spray pattern: Twin flat spray tips provide two flat fan nozzles offset by 60 degrees. When used at pressures of 30-60 psi these nozzles produce excellent coverage with smaller droplets.

Best application: The smaller droplets offer excellent coverage for contact herbicides and insecticides. Twin flat spray nozzles are not recommended when drift is a concern.

Illustration 5

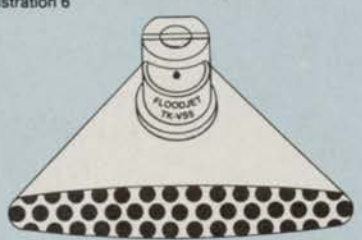


(FLOODJET)

Spray pattern: Flooding nozzles have a wide pattern with heavier edges and are typically used at pressures of 10-25 psi.

Best application: Sometimes used for systemic pesticide application if drift is a concern. Heavier pattern edges require double-overlap to improve uniformity.

Illustration 6



DELAVAN LFR COLOR JET

Spray Pattern: Delavan's LFR Color Jet tip is a 110° flat fan pattern tip that maintains a good pattern across the 15 to 60 psi range.

Best Application: An overlap of 50 percent is recommended for flat fan patterns, and the angle of delivery should be slightly skewed to avoid spray impingement.

Illustration 7

be operated at higher pressures (30 to 60 psi) to produce smaller droplets and better coverage (see illustration 2).

Hollow cone nozzles

Wide-angle hollow cone spray nozzles are also used on many turf sprayers. The large nozzle orifice reduces clogging and a dual chambered nozzle design produces larger droplets to minimize drift. The wide-angle hollow cone nozzle operates at a pressure range of 20 to 50 psi. The circular pattern is not as uniform as full cone spray tips of the same size.

Wide-angle hollow cone nozzles can be used for all systemic pesticides. When used to apply contact pesticides, these nozzles should be used with larger spray volumes to improve coverage of the target (see illustration 3).

Boomless nozzles

Boomless nozzles are a good choice for application situations where terrain or obstructions make it impractical to use a boom sprayer. Typically boomless nozzles, or cluster nozzles, are mounted at the rear of the sprayer and operate at pressures of 20 to 40 psi.

These nozzles can deliver a swath of 30 to 60 feet. This assembly of up to five separate nozzles produces a wide, flat spray pattern.

Mounting the assembly at an angle lowers the nozzle height and decreases the drifting effect of wind on the pattern without reducing pattern width. Since boomless nozzles must project droplets over a much wider distance than most other nozzles, spray distribution is not as uniform as a boom sprayer.

Double overlapping can improve coverage to some degree, but remember, this doubles the total spraying time and the amount of spray material per square foot (see illustration 4).

Twin flat tips

Twin flat spray tips offer excellent coverage for contact herbicides and insecticides and are also a good choice for growth regulators. The twin flat nozzle design incorporates two flat fan nozzles, one 30 degrees forward, one 30 degrees backward, into one nozzle body. The dual angle of attack improves spray coverage.

Recommended for use at pressures of 30 to 60 psi, the twin flat nozzle produces small droplets for more thorough coverage (see illustration 5).

Flooding nozzles, or wide angle flat spray tips, are sometimes used for systemic pesticide application. With a

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typical operating pressure of 10 to 25 psi, these nozzles produce large droplets that resist drift.

The large, circular orifice of a flooding nozzle reduces clogging. The large outer droplets in a flooding nozzle pattern create heavy spray pattern edges and necessitate 100 percent overlap to improve application uniformity (see illustration 6). **LM**

Dr. Pearson is Ag Technical Services Manager of Spraying Systems Co., located in Wheaton, Ill.

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A CLOSER LOOK AT THE CONTROVERSY: ARTIFICIAL OR NATURAL?

Leading athletic field experts claim a place for artificial turf. But, like George Toma of the Kansas City Royals, most would opt for natural grass, given the chance.

by Jerry Roche, executive editor

Though turf experts continue to prefer natural grass athletic fields, they say 'higher-ups' seem more willing to drop big dollars on artificial surfaces.

Contrary to what many athletic turf managers would like to believe, there *is* a place in sports for synthetic turf. At least, so says George Toma.

Toma is field director for the Kansas City Royals Baseball Club and an advisor to the National Football League.

"There are places for both surfaces," Toma says. "Artificial turf can be used in domes, places like high schools where there's a lot of traffic or maybe in colleges or in city parks. The thing I emphasize is that you have the money within 8 to 10 years to replace that turf.

"Your magazine ran an article about how five-year-old artificial turf is about as hard as asphalt (see chart). So either you have the money to replace the turf or the kids are playing on concrete. And how many high schools or colleges have the money to replace artificial turf when it gets hard?"

Toma believes that a misconception exists among field administrators, who hold the purse strings.

He recently consulted with a school system in Texas that had 36 athletic fields and wanted to install two artificial fields. "Now, what good would two artificial fields do for a couple million dollars when they could take that money and improve those 36 fields to be just as good as artificial turf?" he asks. "Grass grows good in Texas...there's just never any money for grass, but millions for artificial turf.

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IMPOSSIBLE, YOU SAY? REAL TURF INDOORS

Many people don't remember that the original turf used in Houston's Astrodome was natural.

In the mid-'60s when the Astrodome was completed, hybrid bermudagrass was sodded under the translucent dome. In the beginning, the stadium sported a lush, green natural grass field that grew quite well. However, when baseball players began complaining that they couldn't see fly balls because of the glare and bright sunlight streaming in through the dome's sky windows, the windows were darkened to appease them. As a result, the light reaching the natural grass surface was severely reduced. With the added stress placed on the surface with both baseball and football, the grand experiment was ended and the natural grass scrapped.

The forerunner

The preceding series of events led Judge Roy Hofheinz, who owned the Astrodome, to contact Monsanto and 3M, who at the time were under a Ford Foundation grant to develop synthetic playground surfaces for inner-city schools. Finally, in 1966, a synthetic turf surface was introduced and installed by Monsanto in the Astrodome.

This was the first major installation of a synthetic turf, the forerunner of hundreds of similar installations. From this point forward, it has been assumed that natural grass cannot and will not grow in the environment of a domed or closed stadium.

Setting the stage

Twenty-five years ago, the situations and conditions of natural grass athletic fields were at an all-time low. The grounds personnel who cared for natural grass athletic facilities were undertrained, received meager budgets for field maintenance, had to cope with severely over-used facilities, mud, bare surfaces, hard ground, compaction, poor drainage, antiquated grass varieties, haphazard irrigation systems and much more. Turfgrass science, soil technology and drainage engineering lagged far behind the demands of the user, the expectations of the general public and the need of those working in the field. There was no new natural grass concept available to sell.

The stage was set for something new and different. So in the door came synthetic surfaces with all the solutions to the previous problems. Ironically, however, that brought a new set of problems: player injuries, high maintenance costs, high replacement costs and hard, hot abrasive surfaces.

Today, the technology and expertise is available to grow natural grass inside a domed stadium. It would require a stadium with a retractable roof similar to Toronto's Skydome.

Dr Kent Kurtz is a professor at Cal Poly-Pomona and a special advisor to the Rose Bowl.

The capability to start a natural grass indoors and have it ready for the baseball season and use it through the football season is possible with current knowledge. The roof would need to be open half-days during the grass's prime growing season (daily 9 a.m. to 3 p.m.) and could be closed for events. All events of major proportion (motocross, trade shows, etc.) could be scheduled for between football and baseball seasons. The turf could be allowed to go dormant or be terminated after the football season, and then replaced in time for the baseball season.

This would be similar to what several major outdoor stadiums experince each year after motocross and major off-road events. Anaheim Stadium, the Los Angeles Memorial Coliseum and the Rose Bowl completely re-work, re-establish and re-sod their playing field surfaces following motocross and/or off-road events. The event promoter assumes the expense of putting the field back in playing condition. Less destructable events such as concerts, circuses or religious events could be held on the field during the playing season just like the outdoor stadiums do by covering the grass with a geotextile cover (polyester fabric) to protect the grass.

The light problem

To achieve the light necessary to grow grass indoors would require supplemental lighting. Supplemental lights can be installed in units or gangs which could move back and forth or around as needed. They could be monitored by a computer which would control all environmental conditions within the domed stadium.

This would be comparable to the technology currently available in the Indianapolis Hoosier Dome. The Hoosier Dome has over 800 light fixtures, generating over 1 million watts. Its roof conditions are constantly monitored by a weather and computer station. The roof is equipped with an automatic snow melting system. Sensors on the roof measure wind velocity, moisture and temperature; when any of these sensors indicates a change, hot air is discharged to melt the snow. Domed stadium lighting to reach acceptable brightness levels to grow natural grass could function in a similar manner.

Other systems

In many natural grass surfaces today, soil sensors tell sprinklers when to water the grass or when not to water the grass. They tell electric heat cables and hot water pipe systems when to warm up the soil for optimum turf growth or when not to warm up the soil.

We can grow grass indoors in greenhouses. Why wouldn't or couldn't dome stadiums be similar to greenhouses? Modern greenhouses are equipped with fully automatic, environmentally-controlled systems to grow plants. The technology is available, the equipment is available, the people to manage natural grass in a domed stadium are available. Now all that is needed is a domed stadium to show the world that it will work.

Synthetic turf can be put on and off a domed stadium surface. But this is a very tedious and time-consuming job. Natural grass is less costly and much less expensive to maintain.

—*Dr. Kent Kurtz*□

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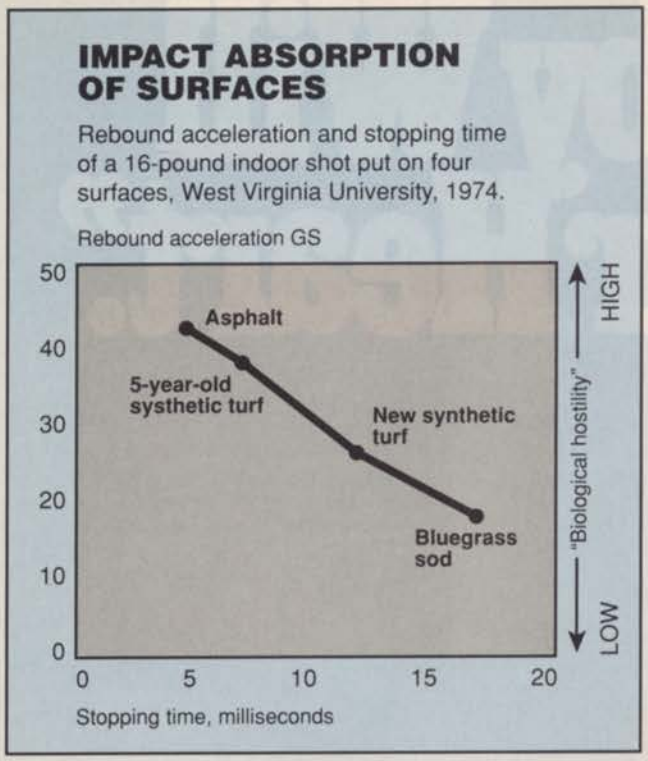


you're putting in artificial turf and then put in natural grass, you'd get all the money you'd want."

Kurtz concurs

Dr. Kent Kurtz of Cal Poly Pomona, an advisor to the Rose Bowl and L.A. Coliseum, says that "when you have too many teams and too many activities, artificial is the only answer. And it's silly to consider natural turf indoors. It's possible to grow grass inside, but it's limited to athletics and not for trade shows and all the other stuff."

Toma says part of the problem in dealing with athletic turf surfaces is lack of concern.

"Many times, our turf programs have to start with the stadium managers, athletic directors, coaches and owners," he notes. "Then, too, the only time they become concerned is when it's rainy and too wet, there are too many injuries, or the turf doesn't look good for the big game.

"The answer is to get them thinking and understanding our soil, turf and equipment problems."

Toma sees public perception as standing in the way of more natural turf fields.

"People take natural turf for granted," he observes. "You see better fields in high school and college than you do in the pros nowadays. But if we can convince the public, natural grass will be back."

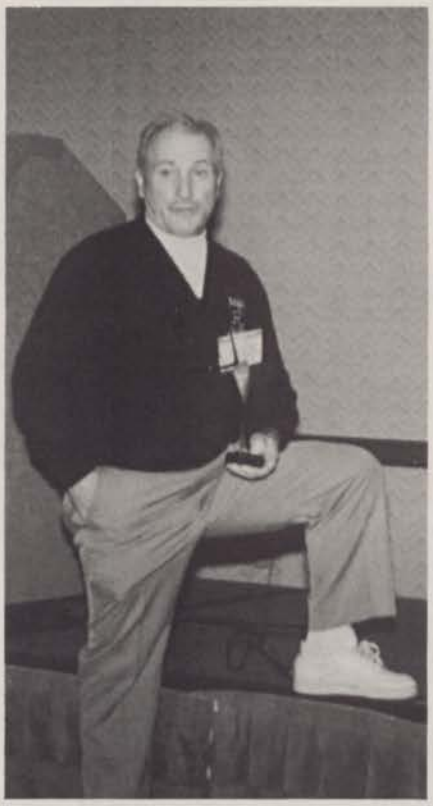
Hot stuff

Toma believes high-traffic fields are more suited to artificial turf, but that natural turf is the best alternative in most situations. One of the biggest problems with the former is surface temperature.

"When the air temperature is 100 degrees (in sunlight), the temperature with synthetic turf is 140 to 160 degrees," he says, "while the temperature with natural grass is 95 degrees."

One of the more apparent problems with artificial turf is the beating bodies take. Kent Falb, trainer for the Detroit Lions, believes that the increased traction afforded by the carpet transmits more stress to ankles, knees, hips and backs.

"The injury rate and severity of injuries is about the same on either surface," says Falb. "But the big difference is a significant increase in general body soreness (on artificial). I look at the number of athletes in the whirlpool, steam room and sauna, and I see an increased consumption of aspirin."



Toma: "If your people don't give a damn about the natural grass, they aren't going to give a damn about the artificial grass."

Though artificial-surface practice fields allow all-weather play and prepare players for games on artificial surfaces more efficiently, there are precautions.

"If practice is held on artificial grass," Falb says, "require players to wear sneakers, and ask the coach to cut down on practice time and practice intensity."

Beware ice

While many of the nation's artificial surfaces are in warmer climates, Toma thinks the synthetic fiber is more suited for northern climes.

"Where grass doesn't do good like in the transition zone or far north, you can put in artificial turf," he says. But Toma also warns, "you have to cover artificial turf for college or high school football games. You can push snow off it, but if you don't have a cover and get an ice storm, no way you're going to play in the snow. At Royals Stadium recently, we could've had a hockey game because the field froze over."

The biggest problem with artificial surfaces is installation technique, Toma firmly believes.

"I'm not against artificial turf, but I sure am against poor artificial turf installations," he emphasizes. "If you're going to pay one to two million dollars for an installation, it should be a pool table. I'm pleading with artificial turf companies to have better installations. A lot of times, they experiment with our money. Then you've got problems. I hate to say this, but in the past we have protected artificial turf companies from the public like we protect child molesters.

"They aren't going to try to improve unless somebody puts a finger on them. People not in the artificial turf business simply don't know what to look for."

The crew's the thing

Artificial or natural, the field is only as good as the maintenance crew, according to Toma.

"If you had a good natural grass field and you switched over to artificial turf, you'll have a good artificial field, if the installation is good. If you had a poor natural grass field and switched over to artificial turf and the installation was good, you would still have a bad field.

"Natural grass taught our kids pride, and they have pride in their artificial turf. If your people don't give a damn about the natural grass, they aren't going to give a damn about the artificial grass." **LM**

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Tensiometers can determine the point at which soil saturation, field capacity and permanent wilting occurs within a particular soil profile.

METER ADVANTAGES MEASURE UP

Accurate soil moisture readings require the technical advantage gained from a variety of measuring devices.

by Jim Ware

The time-honored method of probing the upper soil layer to determine soil moisture is a superficial one. It is also of little use when assessing the actual behavior of water in a growing medium.

Realizing that no standard method of irrigation exists for every landscape, the identity of specific moisture requirements can become a critical component of a total plant care program.

The proper amount and frequency of irrigation is at least as important as the other limiting factors in a landscape maintenance program. Homeowners and commercial accounts alike are apt to design irrigation practices according to "off-the-cuff" intuition rather than by optimum soil moisture reqirements.

Even in the same region and under identical climatic conditions, soil moisture requirements can vary greatly between plant type, soil textures, surface slopes and the physical aspects of the site.

Moisture indicators have existed for years, mostly in agriculture and plant research. These devices can be useful in lawn and landscape maintenance as an aid to plant problem diagnosis or to promote more efficient irrigation techniques.

There are basically two types of moisture indicators: those that respond to changing soil moisture with a resulting change in electrical conductivity, and those that actually simulate a plant's ability to extract water from soil.

Meters are invaluable for mapping soil.

Electrical moisture meters are easier to install and use; however, they can be affected by high levels of soluble salts in soil and cannot respond to very low moisture levels. Nevertheless, they are used to spot check for the presence or absence of soil moisture.

Using tensiometers

Tensiometers (also called suction meters or irrometers), reflect the actual difficulty or ease by which a plant extracts soil moisture. When suction is high, soil drying and plant stress are indicated. At lower suctions, plants can easily obtain the necessary moisture.

The point at which soil saturation, field capacity and permanent wilting points occur within a particular soil can be quantitatively determined with the aid of tensiometers.

Following an irrigation, moisture meters can be used to measure the effects of evaporation, drainage and plant use on soil moisture.

A primary benefit of moisture meters is their ability to indicate the rate a soil dries within a specific water regime and under a particular environmental condition.

Future irrigation

Not only is this valuable for immediate determinations, but it facilitates the understanding of future irrigation needs. By extrapolation of readings, you can project when irrigation will be required.

Aside from indicating moisture thresholds, moisture meters can be used to indicate chronic over-irrigations and the potential for root rots, oxygen deprivation and excessive irrigation costs.

For larger areas of turfgrass and landscaping, moisture meters are valuable for mapping soils and soil

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discrepancies as they pertain to moisture retention. Hot spots, slope variations and differences in plant demand can justify additional irrigation in order to maintain uniform turf development.

Landscape applications

Such information is useful when planning sprinkler system layouts and for determining the operation of a system as it would pertain to pattern distribution and cycle longevity and frequency.

Tensiometers are available in a variety of lengths and sizes to accommodate measurements in the rootzones of various plant species.

For deeper rooted trees and ornamentals, two meters placed in the upper and lower rootzones can monitor

Irrometers are available in a variety of lengths and sizes. (Photos courtesy of Irrometer Co., Riverside Cal.)

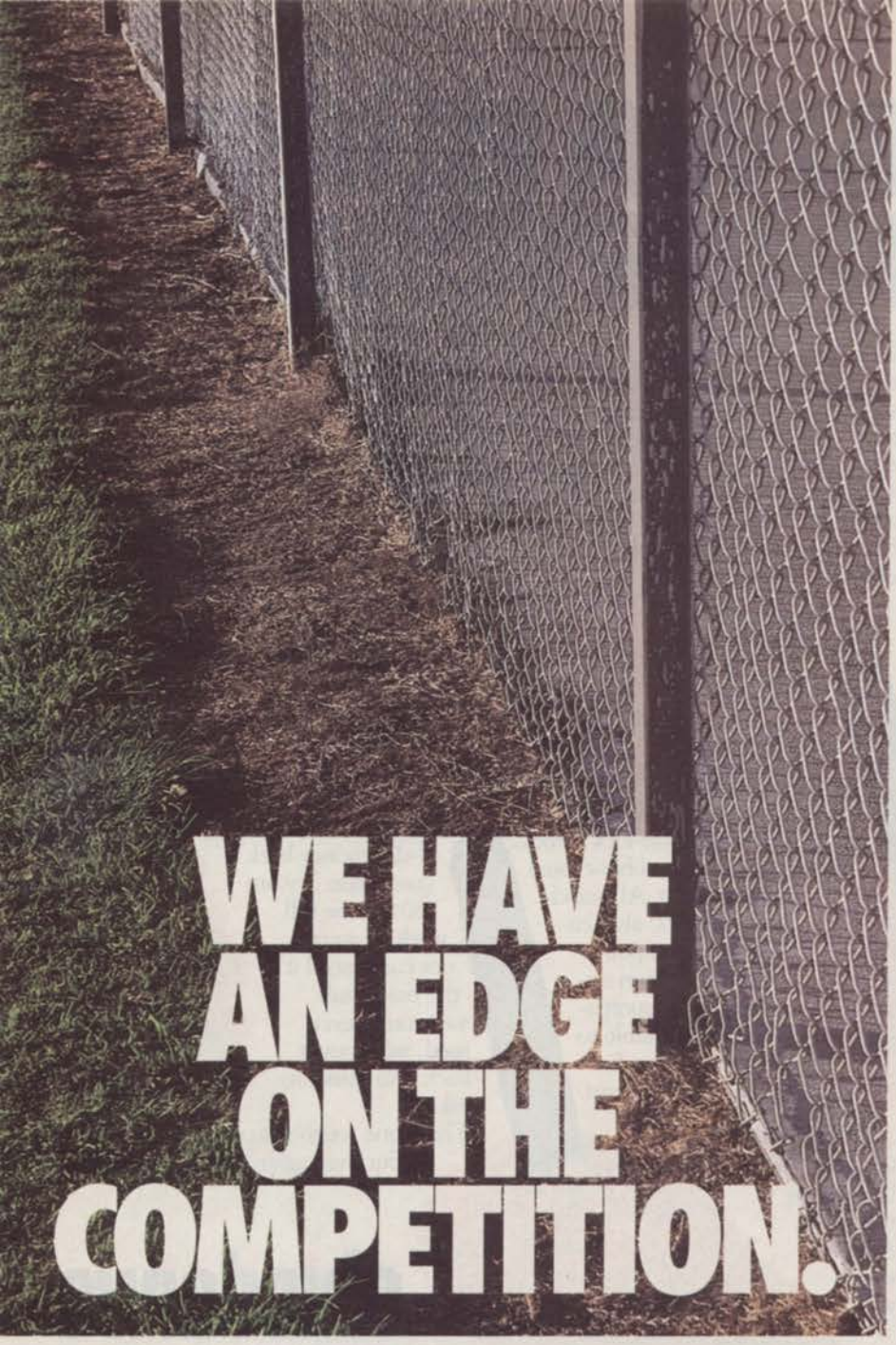
the zone of moisture control between the two measurement points and within the bulk of the root system's density. Except for very deeply rooted grasses, a single meter installation should suffice. It is also customary that meters be placed in areas that are more subject to rapid soil drying, such as sunny locations.

Plus and minus

The advantages of moisture meters are their diversity of uses, relatively low cost, portability and accuracy. A disadvantage is the need to frequently read and service tensiometers when measuring long-term moisture trends. Unattended meters are susceptible to theft or vandalism. However, the size of the account could justify this extra attention, and protective covers can be fashioned to protect above-ground components.

Considering the demand for higher plant quality—especially in light of increasing irrigation costs and the scarcity of water in some areas—using moisture measurements may well become a staple complement to lawn care operations of the future. **LM**

Jim Ware is a consulting agronomist based in Hobbs, New Mexico.



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Circle No. 144 on Reader Inquiry Card

IN-HOUSE AND PICTURE PERFECT

The Eastman Kodak landscaping team operates as a well-run business within a larger corporate structure.

by Terry McIver, associate editor

"Pretty as a picture" is an apt description of the grounds surrounding the Eastman Kodak headquarters in Rochester, N.Y.

That snapshot look was achieved through the dedication and professionalism of the company's 20-man landscape section. The section operates as an independent service within the company, to provide landscape consulting and design services, installation and maintenance for all Kodak properties in the Rochester area.

Cost-saving idea fruitful

According to section group leader Jim Voorhies, streamlining was begun two years ago when Kodak wanted to improve cost efficiency.

"The company wanted us to go through all the various service businesses within Kodak—such as landscaping, parking lot operations, mail delivery— to determine whether it would be more cost-effective to have the services performed by an outside agency," recalls Voorhies. "We found this landscaping operation to be compatible with an outside contractor."

An in-house landscaping team is not a new concept, but Kodak wanted to be sure it was getting the best return by having the service done by a Kodak crew. Other sections in the company are thus charged for services performed.

"It's not like the money is leaving the company; it just moves within the company," explains Kevin Grapensteter, section supervisor of the landscape operation. Return on sales and assets are targeted for all available services, and the team has to bid on any new projects considered by upper management. "We have a slight advantage over an outside contractor," admits Grapensteter, "in that we don't have some costs such as advertising or equipment mortgages."

Regardless, the Kodak landscape section operates like any successful landscaping company. A thorough mission statement dictates that all services be performed in a way that takes into consideration any neighborhood concerns or environmental impact, uses resources effectively and performs the work safely and efficiently.

Sharing the dollars

The Landscape Section had a 1989 operating budget of $1.2 million, dispersed among seven lines of business: lawn maintenance; new installations and restorations; tree and shrub maintenance; bed maintenance; vegetation control; property management; and snow removal.

Of the seven businesses the Lawn Maintenance, Vegetation Control, Tree and Shrub Maintenance and New Installations divisions are the busiest.

Lawn Maintenance receives 47 percent of budgeted dollars to care for 216 acres. Those responsibilities include mowing, edging, thatching, rolling, aeration, fertilizing, chemical application, irrigation, litter pick-up

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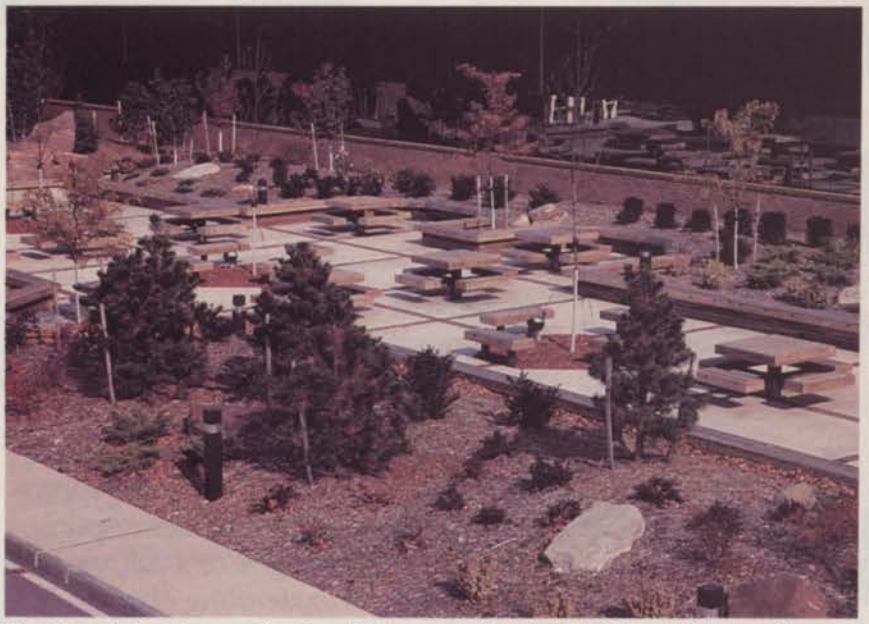
and spring/fall clean-up.

Vegetation Control requires chemical application at stone, mulch and fence line areas, along with field and slope mowing of 500 acres. The New Installation business designs and selects plant material and installs all landscaping of new building sites associated with Kodak Park and the Kodak offices in downtown Rochester. The Tree and Shrub Maintenance division prunes, trims, fertilizes, irrigates and applies needed chemicals to 28,500 plants. Tree varieties include Austrian pines, maplus, flowering crabtrees, locust trees, and andorra junipers.

Equipment costs for the division were also lowered after it hired its own mechanic. "In the past," explains Grapensteter, "we had contracted a certain amount of dollars to the Kodak garage." But when it came to repairing either a truck needed in a hurry to transport Kodak products to a dealer or a piece of lawn equipment, business sense dictated that the lawn equipment repair be put on hold. "Now we don't have as much down time," says Grapensteter. The Kodak landscaping fleet includes two Howard mowers, a number of out-front rotary mowers, and equipment from Cushman, Yazoo, Bobcat, Ford and John Deere.

Flower beds adorn one of the original sections of Kodak park, making the old look new, neat and attractive.



The Kodak Landscape Section designed and installed this picnic area for workers' lunchtime breaks.

Well trained, licensed crews

Voorhies says Kodak believes the growth and customer satisfaction of the landscape department is a direct result of career-oriented employees who are proud of their accomplishments:

- 60 percent have earned associate degrees;
- 80 percent have had previous landscaping experience;
- 85 percent are New York State licensed pesticide applicators.

All employees are versatile and trained to assist other sections within the department.

"The last six or seven people we've hired have had education in the (horticulture) field plus prior experience; some owned or still own nurseries," says Voorhies. "We have nine maintenance crews of two to five men each," explains Voorhies. "They report to fully equipped work stations, each with its own group leader. The group leaders are familiar with their designated area and have a good rapport with people they work with."

Good ideas get around

Each duty is organized independently along geographic lines. The layout requires group leaders to make decisions, prioritize work loads and use resources as conditions warrant.

An on-going cross-training program ensures maximum use of personnel and resources while developing experience for back-up personnel. Grapensteter says cross-training not only gives insight into how another area operates, "it introduces ideas from one area to the next. Therefore, a time- or money-saving idea can work its way through."

To maintain a quality workforce, cross-training is supplemented with safety seminars and alternate work hours for improved equipment use.

To increase productivity during the growing season, various activities are scheduled during winter months. Educational seminars and training sessions are conducted, group leaders meet, safety meetings are held. Winter is also a good time to prune trees and remove dead vegetation from along security fence lines.

Grapensteter says that to find good part-time help, the division visits local colleges to recruit horticulture students who are interested in working for Kodak during summer.

"If they can pick up some useful information during the summer and get paid for it at the same time," says Grapensteter, "we both win." **LM**

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GETTING THE CHECK IN THE MAIL

Collecting late accounts involves tact and perseverance. And if that fails, there are always collection agencies.

by Ed Wandtke

Many companies are not too concerned with their accounts receivable at this time of year, except companies that want to keep cash flowing consistently and avoid having to "write off" sizable balances.

In other words, now is the time to develop a collection system that insures payment for your services soon after they are performed—or even earlier!

Billing as services are performed remains the most popular collection system in the green industry. Yet many companies do not have an effective system for collecting these invoices once they have been left at the customer's property.

Customer contact

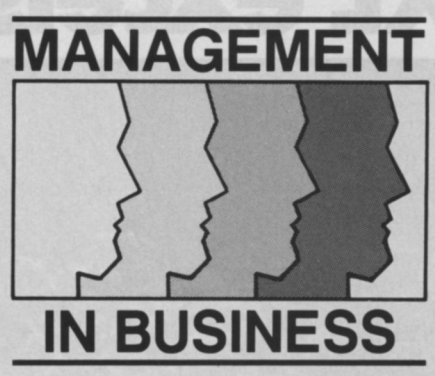
Because landscapers often lack personal contact with their customers, instructing the customer about the acceptable payment method for your invoice is sometimes difficult. Many companies mail customers a confirming invoice once services have been performed. Others wait up to 15 days for payment. If it doesn't come, a statement mailing process begins that repeats every 30 days until the account is paid.

This customer training continues with telephone contact and letters, all of which lead to improved, timely collections of accounts and the avoidance of having to write off or turn accounts over to collection agencies.

At this time of year, many new customers have been brought into the fold. Get them in the habit of making timely payments by calling them about 25 days after services were delivered. Ask them if they were satisfied with your work, and remind them that payment is expected according to the terms agreed upon.

In addition to reducing late payments, this extra effort will give you important feedback on your company's performance.

Monthly maintenance companies can benefit from several new techniques that have helped improve collections.



One such innovative approach used widely today is the early payment plan, which offers customers the option of pre-paying for your services.

Many pre-payment plans include a discount of five to seven percent. A more effective plan rewards customers with a five to 10 percent discount, thereby inducing them to save more money by paying earlier.

Companies are finding that many customers prefer to be billed in even, monthly installments. While this technique diverges from the idea of billing after service delivery, it does offer the customer the convenience and predictability of consistent monthly payment terms.

There is an additional side benefit from having your customers on this payment system: you can pre-bill all your customers on the first of each month, *before* you deliver services. Hence, services can be withheld from problem customers.

If you are in the landscape construction or installation business, a desirable plan would be to collect 33 to 40 percent of the contract when it is signed.

These practices will enable you to maintain a steady billing and collection system that should avoid collection problems later in the year.

Dissatisifed customers often refuse to pay an invoice, yet many choose not to communicate their dissatisfaction to you. Instead, they withhold payment and wait for you to contact them. Therefore, your collection plans should include a review system that identifies past due customers.

Whether you have a manual or computer-based accounts receivable system, human effort is needed to review past due and slow-paying accounts.

There will always be people in this world who believe that delaying their payment will enable them to make a deal with you later in the year to settle their balance at a lesser payment. These customers demonstrate the need for assessing penalties for late payments.

Assessing late fees

Interest charges added to a customer's past due balance rarely cause people to pay earlier. However, assessing a monthly administrative fee of $10 to $50 for maintaining a past due balance often will get their attention.

Letters to a customer indicating their past due status don't always work. But when you combine letters with a telephone call you often get the balance paid.

If you have been using only one method to collect past due accounts, consider the benefit of two. You'll find the results will be worth the additional effort.

Calling on the services of a collection agency should be the last course of action when dealing with late-paying customers. A collection agency determines its willingness to pursue an account by the size of the outstanding balance.

Collection agencies may create more ill will for your company than the monies they collect for services rendered. Still, collection agencies often remain the only course of action that will result in payment.

Once an account is turned over to a collection agency, you should expect that customer to terminate his relationship with your company. **LM**

Ed Wantke is a senior consultant with All-Green Management Associates in Columbus, Ohio. He focuses on operations and financial questions.

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Circle No. 152 on Reader Inquiry Card

JOBTALK

Residents flocking to golf communities, a good place to sell landscape services

Because two-income families are so busy, even traveling to and from leisure activities can be regarded as a waste of time. Perhaps that's why there's such high demand for homes in private golf course communities.

"Developers can't build golf course communities fast enough," says Mary Ann Wands, director of marketing and management for Macom Corp., Naperville, Ill., developers of the new White Eagle Club in Illinois. The 754-acre recreational-residential community will have some 800 custom-built, single-family homes and about 700 townhouses surrounding an 18-hole, Arnold Palmer-signature golf course.

Pleasure-seekers

According to Wands, the primary attraction of private golf course communities are ambiance, lifestyle, and prestige. The association with an elite and elegant community linked to an exclusively country club gives homeowners an image of success and achievement.

"There's also the assurance that residents will have beautifully landscaped open space to look at for many years," Wands adds.

Teamwork between the developer, designer, merchandiser and the landscape architect is vital to creating the community's image.

Landscaping is critical to the image of these communities, says Dean MacMorris of the Brickman Group Ltd., Long Grove, Ill. "The entries and perimeters along the major roads were landscaped well before amenities like the clubhouse and recreation center, so that buyers immediately can see the high-quality image that the whole community will have when it's finished. A good first impression conveys the message that the homes are high-quality too."

Landscaping sells

"It's important that the landscaping not only accent the exteriors of the homes, but also convey a feeling of 'greenness' while maintaining continuity with the naturalistic setting of the rolling site and trees," says developer Don Meyer, executive vice president and chief operating officer of McIntosh Ltd.

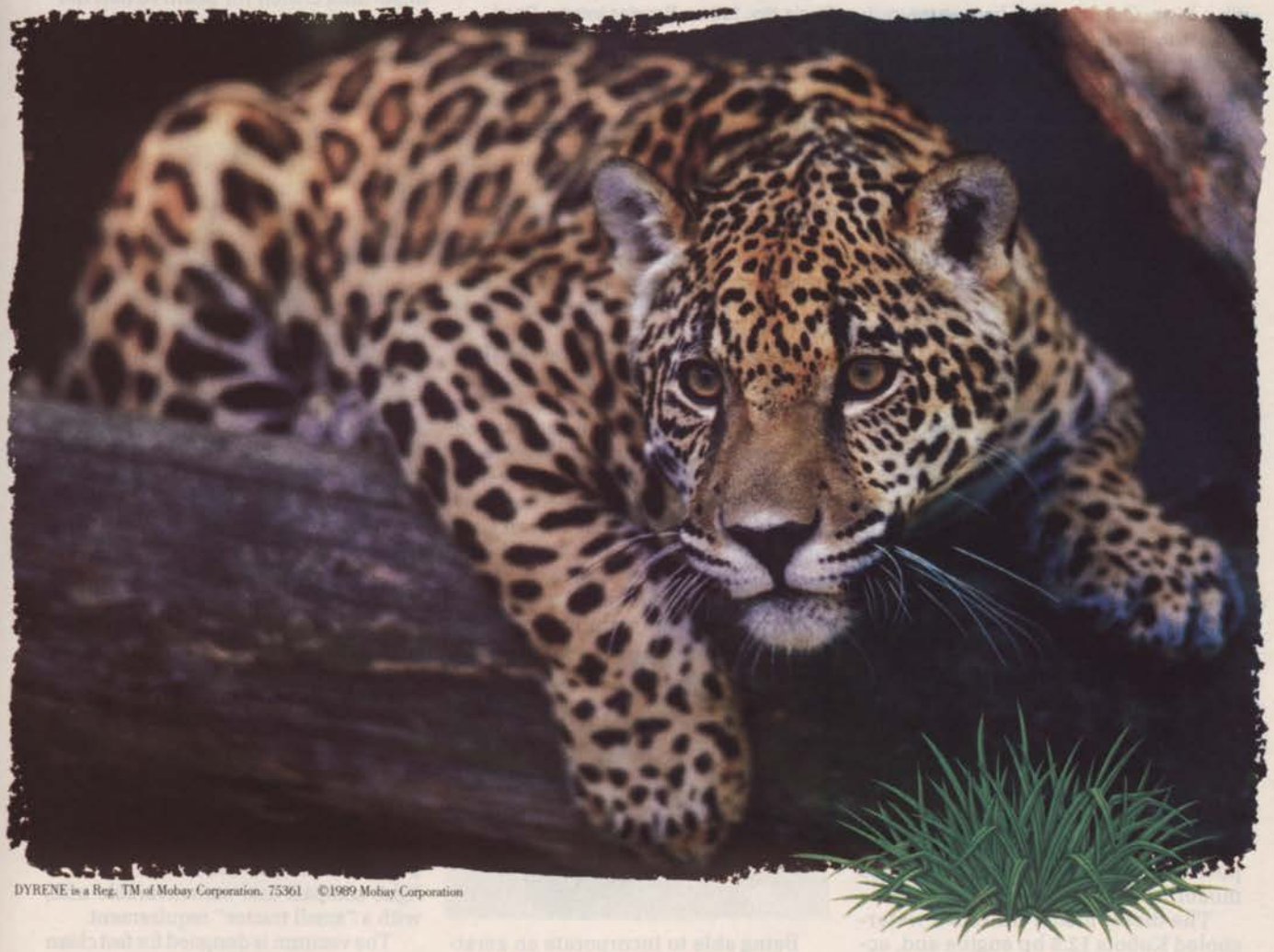
Wands adds that teamwork between the developer, designer, interior designer/merchandiser and landscape architect is vital to creating the community's image.

"You must be sure that all the pieces fit together, that everyone's on the same wavelength," she said.

According to Wands, landscaped grounds, including the golf course, are a key part of the amenities that attract home buyers to a golfing community. "And you can't have enough amenities," she adds. **LM**

Golf course communities such as Four Seasons, in Lakewood, New Jersey, convey a sense of stature and ambiance with intensely-manicured landscapes.

Some Things in Nature Were Meant to Have Spots. Your Turf Just Wasn't One of Them.



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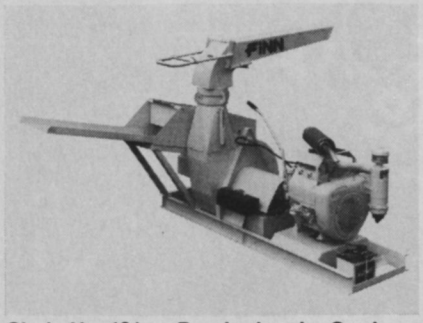
Circle No. 136 on Reader Inquiry Card

PRODUCTS

Spreader is compact; more room for mulch

The Finn Corporation has come out with the B-70 side entry straw/hay mulch spreader. The side entry model is designed to require a minimum amount of truck space, allowing for greater mulch storage. The B-70 skid has an over center clutch as standard equipment and an overall rugged design for many years of dependable, trouble free performance. It can handle as much as 6-7 tons of material per hour, with a discharge distance of up to 60 feet. It is available with either an air cooled gasoline or water cooled diesel engine.



Circle No. 191 on Reader Inquiry Card

Sand trap rake now available in diesel

Smithco, of Wayne, PA now offers its Super Rake sand trap rake in a diesel powered unit as well as the earlier gas model.

The diesel model utilizes a water-cooled Kubota 12.5 hp engine and, according to Smithco, is the most powerful trap rake available.

The gasoline engine is a 16 hp Kohler, also the largest in the industry. Both models have ground speeds up to 9 mph.

A front-mounted 40-inch plow is

standard equipment, to quickly handle wet and washed out sand.

The plow controls are manual or hydraulic. The rake and cultivator both have hydraulic power. The rear-mounted engine directs heat away from the operator and is immediately accessible under a hinged pop-up hood. Optional attachments include a fan rake, scarifier, drag mats, disc edger, grader box and spiker.

Circle No. 192 on Reader Inquiry Card

Seeder provides greater germination, emergence

The Solid Stand Seeder from Land Pride is designed for accurate interseeding and new seeding of grasses.

The company says the three-way soil-to-seed contact system provides greater germination and emergence with the solid advantages of a full width seeding pattern.

First, the PTO driven knives slice into the ground creating slots to receive the seed. The proven fluted seed cups then precisely meter the desired amount of seed in a broadcast pattern.

Easily adjustable double torsion tickler tines agitate the seeding surface to help promote soil-to-seed contact. Solid cast iron packer wheels finish the job by pressing and firmly packing the seed, eliminating air pockets for proper germination.

Being able to incorporate an aerating procedure into an interseeding program helps eliminate the need for a separate pass, while promoting a more accurate renovation of established turf.

Circle No. 193 on Reader Inquiry Card

Slicing attachment for power thatching unit

Encore Manufacturing now offers a slicing attachment for the Pro Power-Thatch, its heavy duty commercial dethatcher.

Cutting blades of the new slicing attachment adjust to a depth of 3½ inches and width of 1½-3 inches. The blades are .060 high carbon tempered steel.

The company says the Power-Thatch is tough on thatch, yet operator friendly. It features a single action height adjustment, 28 self-cleaning, flail-type fingers, and minimal vibration. A 5-hp Briggs and Stratton engine provides the power.

Additional features include a dead-man clutch for positive belt disengagement, collapsible handles for

easy transporting, heavy duty wheels with sealed ball bearings and semi-pneumatic tires.

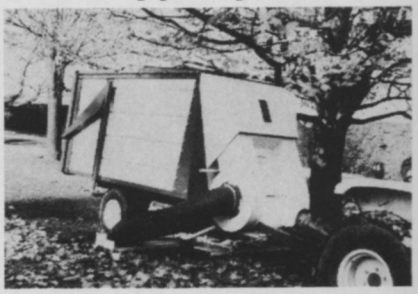
Circle No. 194 on Reader Inquiry Card

New vacuum unit is light, contains many options

Brouwer Turf Equipment, Limited introduces the new Brouwer Vac 138, a light, compact and maneuverable unit, with a "small tractor" requirement.

The vacuum is designed for fast clean up of leaves, grass clippings and litter. It is ideal for golf courses, parks, recreation areas, sod farms, airfields and grassed highway verges and medians.

Some outstanding features include full floating pick-up nozzles with



height adjusters; high output dual blowers; hydraulic hopper tilt; 5.1 cubic yard capacity; light weight for low compaction; corrosion resistant aluminum sides and quick detach blower hose connections.

An optional, 15 ft. extension hose is available for added versatility.

Circle No. 195 on Reader Inquiry Card

continued on page 88

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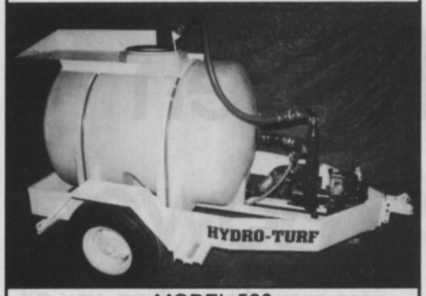

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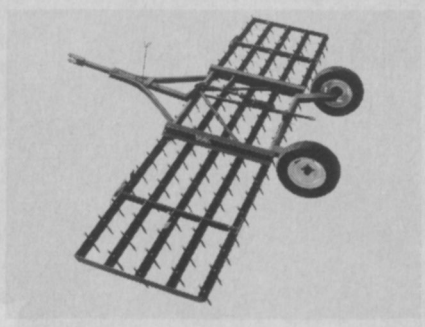
Circle No. 124 on Reader Inquiry Card

PRODUCTS *from page 86*

Tillage tool levels, mulches, agitates soil

The Harogator spike tooth tillage tool is new from Unverferth Manufacturing, Kalida, OH.

The Harogator levels, mulches and agitates soil and distributes rougher textured soil and trash. A versatile



implement, the Harogator can be used for all types of landscaping and maintenance jobs such as seedbed preparation, leveling, resodding, preparing golf courses for seeding and for smoothing ball diamonds, parking lots and horse exercise yards and to incorporate herbicides or fertilizer.

The Harogator is wheel-shaped and engineered with five angle iron crossbars which push soil ahead, leveling the field or seedbed while its angle iron edges help break up trash and surface chunks. The dragging action of the crossbars distribute this rougher textured material. The unit's spiked teeth mulch and agitate soil at planting depth and break up large clumps of earth.

Circle No. 196 on Reader Inquiry Card

Seeder/spreader uses variety of products

A new 3-bushel capacity Poly Hopper seeder/spreader from Worksaver, Inc. is ideal for year-round use to spread various materials such as dry sodium chloride for ice control and

fertilizer and seed.

The Poly Hopper is translucent to allow quick checking of content level, is rust, corrosion and puncture resistant and does not crack or lose its shape in extreme temperature changes.

Engineered with adjustable brace rods that provide quick rigid mounting, the Poly Hopper can be attached to pick-ups, tractor draw bars and a variety of other vehicles. The unit features a heavy-duty, 12-volt electric motor with hopper agitator and a positive seed gate control with adjustable lock scale plate.

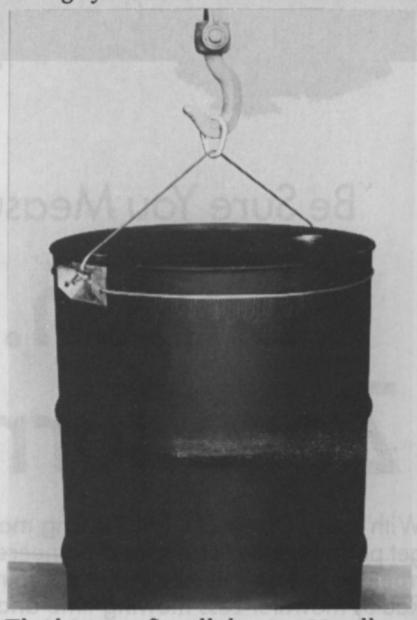
The seeder/spreader comes complete with wiring harness. An optional extension that increases the Poly Hopper's capacity to six bushels is available.

Circle No. 197 on Reader Inquiry Card

Barrel harness eliminates heavy lifting, injury

The patented Bold Eagle Barrel Harness is now available in a heavy-duty model from Free Enterprise Systems, Inc.

Galvanized aircraft cable grips the circumference of the barrel under the lip, and stainless steel brackets prevent any slippage. It has a galvanized lifting eye to accomodate a hoist hook.



The harness fits all drums, 55 gallons and smaller. It lifts steel, plastic, fiber and open-top drums, according to Free Enterprise Systems.

The company says the harness weighs three pounds, and has a rated capacity of 1100 pounds.

Circle No. 198 on Reader Inquiry Card

Latest technology used in new lawn seeders

BlueBird International has introduced a lawn seeder available in two models, the F-20 and the F-20B BlueBird Lawn Comber.

Seed is dropped, then cut into the

soil by the Delta blades of the patented Delta Reel. Delta Reels are standard equipment and the Delta blades do not tear up the turf due to their swept-back, beveled, leading edges.

Use of the Delta Reel during the

growing season will open the soil for water and nutrients to penetrate down to the roots of the grass, according to BlueBird.

Circle No. 199 on Reader Inquiry Card

Hand-held computer designed for reliability

The TMDR is an economical, hand-held data computer designed for reliable field use even in hostile environments.

Features include simple operation, environmental packaging, PC programmability, applications flexibility, and lightweight, compact design.

LCD display with graphics capability allows viewing of complete screens of data. A full alphanumeric keyboard, color coded by function, permits easy data entry.

Ten programmable function keys eliminate time consuming, repetitive operations. The sealed keypad and display overlays provide trouble free

operation under varying conditions at an operating temperature range of -20°C to 60°C.

Circle No. 200 on Reader Inquiry Card

Pick-up sweeper cleans debris from golf courses

Star City Fabrication offers Mars Suburban Pick-Up sweepers to simplify everyday outdoor cleaning tasks.

These sweepers are ideal for golf courses and other large grass areas

where aeration plugs, leaves, twigs, and other debris need to be picked up on a regular basis.

The same Mars Pick-Up sweepers can also be taken to the street to clean driveways and parking areas. An optional side broom is available for cleaning close to curbs.

With a sweeping swath of 48 inches, the units will sweep from 1½ to 3 acres per hour at speeds from 3-7 mph. The hoppers come in two sizes: seven and 20 cubic feet.

Star City says the sweepers have their own power source, and require

MORE EFFECTIVE

Get effective weed control using less spray.

It only takes a few drops of a specially formulated, premixed Expedite® herbicide to do the job. You don't have to spray to wet. Expedite provides uniform distribution of spray droplets and proven weed control with just one pass. Make a change for the better. Contact your local Greens Center or call toll-free: **1-800-323-1421.**

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■ Tests prove it has superior overall turf quality ■ Excellent density, disease resistance & rich green color ■ Consistently outperforms many newer bluegrasses ■ Early spring and late fall color retention ■ Good tolerance to drought and close mowing ■ First choice with many sod growers, stadium, golf, park superintendents and other turf experts. Get full details in technical bulletin #10.

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THE GREENER KENTUCKY BLUEGRASS™

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ROTHWELL SEEDS LTD. Lindsay, Ont. CAN K9V 4L9

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only a tow hitch.

No mounting or tractor adaptations are necessary. This unique design allows the sweeper to be towed behind garden tractors and riding mowers.

Circle No. 201 on Reader Inquiry Card

"Revolutionary" preseeder tills, levels and rakes

ATI Corporation has released the Model 600 Preseeder to its line of landscaping equipment.

Like the larger Model 686, the Model 600 features the design which

the company says "revolutionized lawn seeding." The Model 600 tills, levels and rakes to transform a rough-grade into a professionally-finished turf seedbed.

Rocks and debris are swept into a windrow for easy pickup and removal. The 600 is well-built for long service and low maintenance. It is designed to operate with 16-30 hp tractors and is available with hydraulic or manual depth control.

Circle No. 202 on Reader Inquiry Card

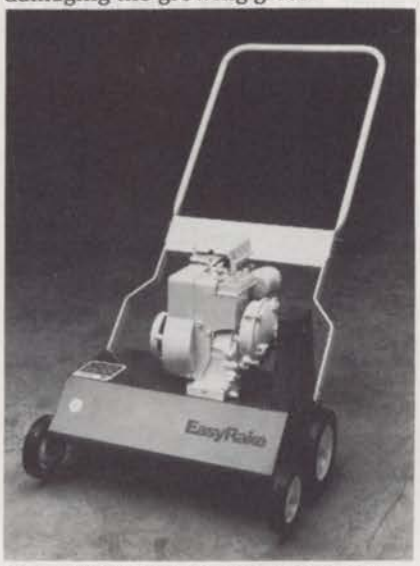
New power unit solves thatch control problem

Easy Rake, of Lebanon, IN says the benefits of power thatching are numerous, including elimination of surface accumulations of clippings and thatch, thinning of matted growth, which is pulled to the top of the grass for easy removal and improved color and general appearance of the lawn as brown material is removed.

Modern engineering, based on findings of research such as that conducted by Easy Rake researchers has led to the development of highly efficient mechanized thatching equipment for both residential and commercial use.

Typical design elements of Easy Rake power thatchers include a series of spring tines placed 2 1/4 inches apart in rows which are 3/4 inches apart. With every revolution of the rake shaft, two tines touch the ground every 3/4 inch, allowing the thatch to be lifted to the top of the grass for easy removal in fairly large pieces.

Tines are designed to enter the ground to a depth of 1/4 inch, thus combining the grass efficiently without tearing or damaging the growing grass.



Circle No. 203 on Reader Inquiry Card

Computer aided gardening system is user friendly

"Root Directory" from Garden Tech is a new state of the art computer software program designed to make tree and plant selection easier and more correct.

The program features more than 1000 species and varieties of trees and 400 varieties of flowers; pest identification and organic control recommendations; plant care and plant propagation; and flower heights, colors, blooming seasons and types.

Graphic highlights include hypertexts, hypergraphics and detailed pictures.

"Root Directory" runs on IBM XT, AT, PS/2 and 100 percent compatibles. It requires 512K of memory and a hard disk drive.

Circle No. 204 on Reader Inquiry Card

Riding aerator leads to productive day

The riding core aerator from Ransomes operates with a 54" swath and has a capacity of 60,000 square feet/hour. Its wide, smooth tires and three wheel design distributes weight evenly, minimizing turf marking.

Core spacing is variable from one to six inches, without stopping the machine. A variety of tine diameters are available.

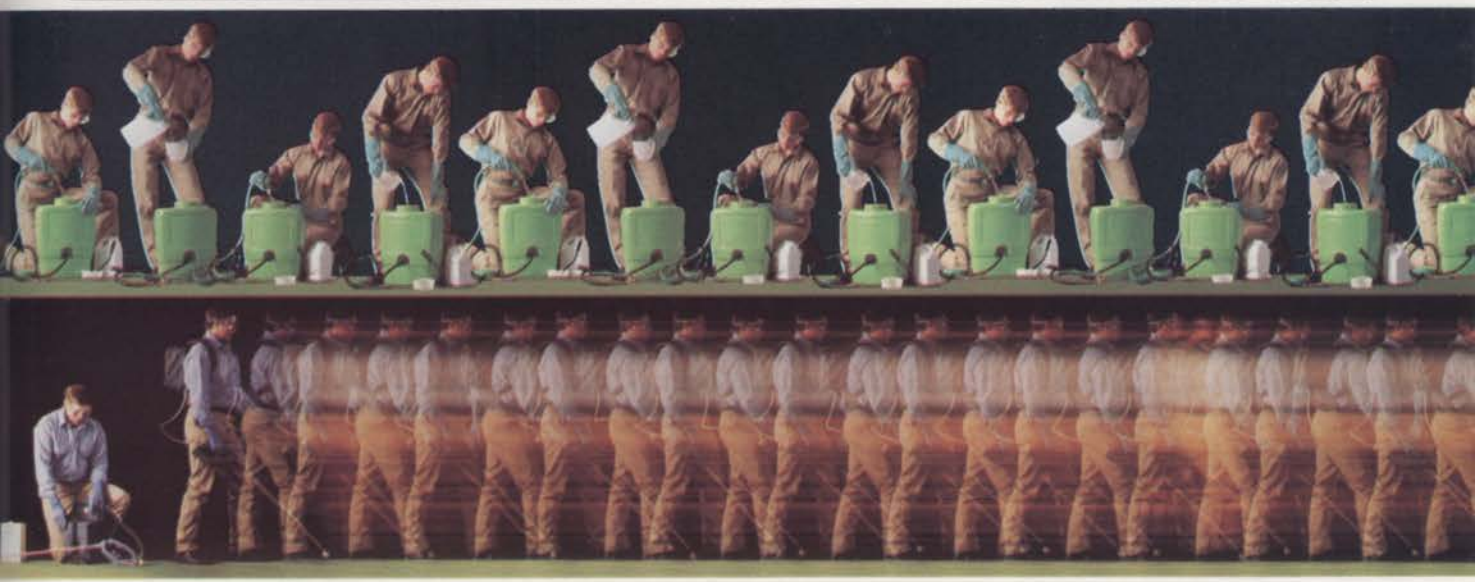
The machine's free-floating tine system helps assure the highest quality aeration. The system cleanly removes cores and allows tight turns during maneuvers. Dual floating aerator heads with exclusive Tine-

Saver design follow the contours of the turf and help absorb shocks when tines hit obstructions, extending the life of the tines.

Circle No. 205 on Reader Inquiry Card

Planting spot keeps weeds under control

The Poly Planting Spot from Poly Enterprises is designed to keep weeds and other vegetation from growing around your trees and plants.



MORE PRODUCTIVE

Make better time without having to constantly refill.

One 1.3-gallon box of Expedite® herbicide can treat the same area covered by a 3-gallon backpack refilled 15 to 25 times! Expedite is also easy to use — yet precisely accurate. So you reduce the chances for mixing errors and waste.

Make a change for the better. Contact your local Greens Center or call toll-free: **1-800-323-1421.**

Circle No. 141 on Reader Inquiry Card

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Made of a specially formulated cellular vinyl, it looks like rich dirt and will blend into the landscape.

The Planting Spot weighs five pounds, so it won't blow away. Its large size will keep a two-foot area

around your tree clear of vegetation for years, according to Poly Enterprises.

It is economical and maintenance-free. Uses no chemicals.

Circle No. 206 on Reader Inquiry Card

Commercial edger made for a longer life

Scag Power Equipment makes a commercial edger with a large, milled-edge 10-inch blade for a cleaner cut and longer life. The unique design and engineering of the Scag edger eliminates all springs, sliding booms and other components.

Heavy-duty Fafner agricultural bearings are used. Distance from the tire to the blade is fixed, so the edger can ride on the narrowest of curbs without adjustment.

Circle No. 207 on Reader Inquiry Card

Three edger models to fit every need

Little Wonder, a division of Schiller-Pfeiffer, Inc., makes three models of edgers and a selection of dependable engines to fit a variety of landscaping needs.

All models come with rugged steel frames, a cast iron cutter head with a grease fitting and steel hub wheels.

The edging depth is set by adjusting the front wheel, thereby giving maximum power to the blade at all

MORE PROTECTION

Closed system offers better worker protection.

Expedite® herbicides are premeasured and premixed. So you don't come in direct contact with them. You simply connect the Expedite lance hose to a sealed 1.3-gallon box of herbicide. Then set the lance and you're ready to spray.

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EXP-0-102 (I)

edging depths.

With the 10-inch hardened tool steel blade, edging is possible up to depths of four inches at a cutting speed of up to 90 feet per minute.

Circle No. 208 on Reader Inquiry Card

Erosion control matting in a variety of widths

Enkamat erosion control matting is now available in a variety of widths up to 15 feet.

The continuous surface of the wider piece eliminates problems occurring at overlap, makes staking easier, and reduces installation time and expense.

Enkamat's three-dimensional

nylon matrix helps grass roots obtain a sound footing, making vegetation almost impervious to damage by heavy waterflow.

Enkamat wide width offers considerable cost and labor savings when used instead of concrete or rip rap for erosion control.

Circle No. 209 on Reader Inquiry Card

Bed liners made to fit Deere transport vehicles

Protect-A-Bed of Hampshire, IL has introduced a high density polyethylene liner that will fit both the John Deere AMT 600 and AMT 622 transport vehicles. The tough, seamless liners come compleete with a tailgate liner. Protect-A-Bed says the liner makes loading and unloading easier. Liners install in minutes, and are re-

sistant to sun exposure, acids, gasoline, fertilizers, insecticides, salts and solvents.

Circle No. 210 on Reader Inquiry Card

Heavy-duty leaf bags make clean-up easy

RedMax now makes 30" x 60" premium quality, heavy-duty leaf bags for quick and easy lawn clean up.

The bags are made of dense plastic tough enough to hold twigs, leaves and wet grass, and are available in easy-to-use 10-packs.

Circle No. 213 on Reader Inquiry Card

Sprinkler housing system universal, easy to service

American Irrigation Repair & Supply has developed a two-part, universal sprinkler housing.

The Eagle Universal Housing consists of a base and bell. According to the company, it can be used with any 4-, 8-, or 2-hole sealamatic (SAM) bearing guide Rain Bird sprinkler as

well as some Weathermatic sprinklers.

American says the housing is unique because it allows you to service the sprinkler by detaching the bell and leaving the base and sprinkler in the ground. The bell can be removed by loosening a few screws. The company says you can also change the type of sprinker while still using the same housing.

The Eagle is made from ultra-high-molecular-weight polyethylene; the base of the unit has stainless steel inserts which prevents the fitting from rust and corrosion.

A soft coated lid for sports field applications and a custom check valve are also available.

Circle No. 212 on Reader Inquiry Card

Sensor device prevents sprinkler system freeze-up

Glen-Hilton Products, Inc. has devel-

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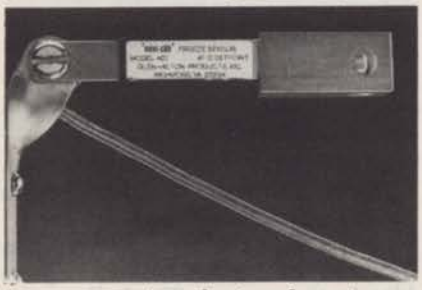
oped an economical Freeze Sensor to prevent automatic sprinkler systems



from operating during freezing or near-freezing temperatures. The sensor has a heavy-duty aluminum mounting. The sensor accurately measures the temperature, then cuts off the system at the appropriate setting. The system is reactivated when the temperature rises above the setpoint. Backed by a 5-year warranty.

Circle No. 215 on Reader Inquiry Card

Flexible brushes assist in topdressing greens

The Flex-Brush from Standard Golf is a set of three brushes that attaches to the cutting units of Toro and Jacobsen greens mowers to brush a swath as wide as each mower's cutting width.

On a light top dressing application, Flex-Brush lets you brush in sand faster than you can mow a green, according to Standard Golf.

It's also an excellent tool for deep tine aeration, when top dressing is needed deep in aeration holes.

The brushes follow the contours

and undulations of all top-dressed surfaces, says Standard Golf, like no dragging method can.

Circle No. 216 on Reader Inquiry Card

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Circle No. 104 on Reader Inquiry Card

New soil moisture control for landscape irrigation

Irrometer Company has introduced a new soil moisture control system for automatic landscape irrigation systems. Based on the company's patented Watermark soil moisture sensor, the Watermark Four Zone Moisture Control panel interfaces with any standard 24 VAC irrigation controller.

Featuring the no-maintenance Watermark soil moisture sensor, the new system allows an irrigator to divide the valves on a controller into as many as four "zones," representing various irrigation needs, such as turf versus shrubs, full sun versus shade and top of a slope versus toe of a slope. Each "irrigation need" zone then has its own moisture sensing station, which in turn controls the valves which irrigate that "irrigation need zone."

Each zone can be independently adjusted and fine tuned at the panel for desired moisture level. The panel also features a by-pass switch for manual override of the sensor control

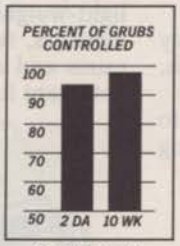
Circle No. 217 on Reader Inquiry Card

Newest flail cutting head for rough weeds

The Micro-Mower company now makes a new flail cutting head for both the MP92.5T and MP135T arm mower.

The new flail head, called the FL40, is a high-speed head with the unique capability of doing rough

When it comes to grubs, it's not enough just to suppress them.



Compiled from 18 university trials, 1985-86.

You want to squash them. Pulverize them. Grind them into dust. Send the little buggers to the root zone eternal.

And who could blame you?

After all, this one creature has probably baffled more turf professionals, made a mockery of more chemical company claims, than all other turf insects combined.

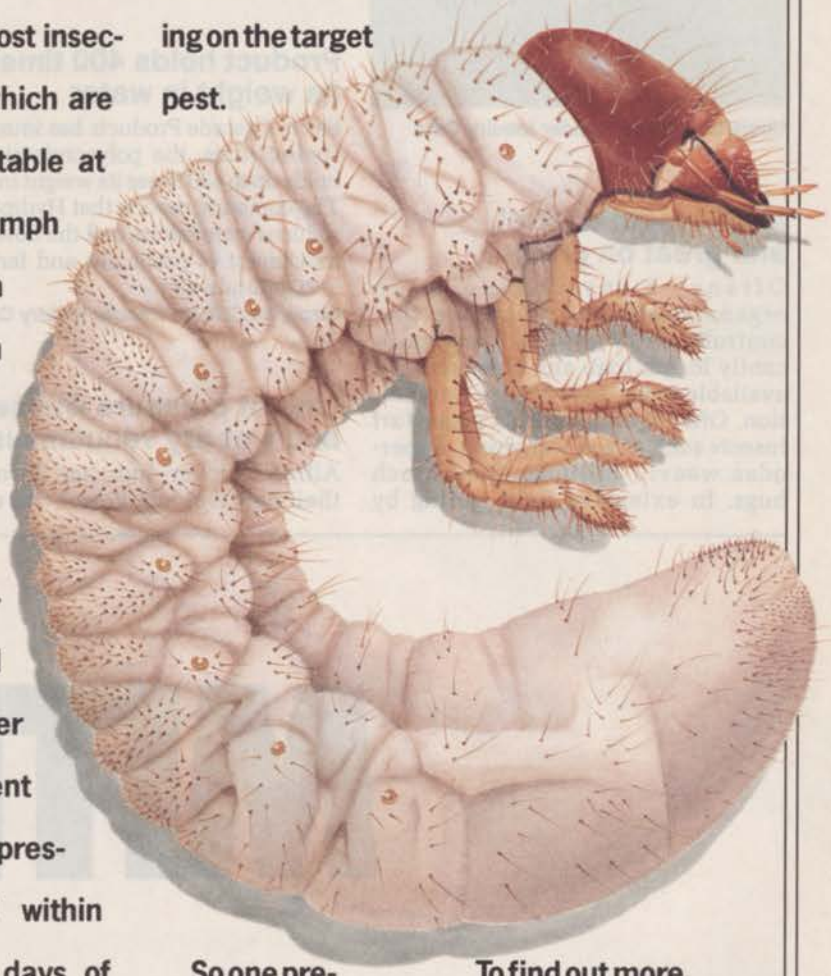
Triumph® is changing all that.

Unlike most insecticides, which are unpredictable at best, Triumph has been proven in over ten years of testing to consistently rid turf of over 90 percent of grubs present. And within just 2-3 days of application.

Better yet, once applied to the soil, Triumph keeps on working for up to 10 weeks, depending on the target pest.

So one preventive application in late summer or early fall is all that's needed to protect turf from costly grub damage.

And protect you from losing what profits you have made to callbacks.



To find out more, contact your turf products distributor or Ciba-Geigy representative.

TRIUMPH

HOW TO SQUASH A GRUB.

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For retail sale to and use only by certified applicators or persons under their direct supervision, and only for those uses covered by the applicator certification.

weed cutting work as well as the fine finish cut expected of small flail mowers.

By changing the shielding and rotation of the rotor, the operator can match his machine to the cutting conditions.

Circle No. 218 on Reader Inquiry Card

Multi-insect control, and great on grubs

Oftanol 2 insecticide is an organophosphate insecticide that controls white grub larvae significantly longer than any other product available today, says Mobay Corporation. Oftanol also controls major turf insects such as sod webworm, hyperodes weevil, billbugs and chinch bugs. In extensive field testing by Mobay Corporation and university researchers, Oftanol demonstrated outstanding efficacy and consistency.

Mobay says Oftanol 2 provides significantly longer grub control than any other product available today.

It will not leach out during heavy rains and does not tie-up in thatch, according to Mobay.

Check calibration periodically to encure that equipment is working properly.

Circle No. 219 on Reader Inquiry Card

Product holds 400 times its weight in water

Sierra Cascade Products has introduced HydroSource, the polyacrylamide that holds up to 400 times its weight in water. The company reports that HydroSource reduces water stress and the downward movement of pesticides and fertilizers into groundwater.

Circle No. 220 on Reader Inquiry Card

Line of pressure washers and wet dry vacuums is out

Alfred Karcher, Inc., has introduced their new Outdoor Power line of high pressure washers and wet-dry vacuums to power equipment dealers.

Karcher's product line includes three gasoline-powered commercial high-pressure washers, two electric light-weight consumer high-pressure washers, two electric wet-dry vacuums and a complete accessory and detergent line.

Circle No. 229 on Reader Inquiry Card

Engine maintenance meter monitors engine wear

The Sipap Maintenance Meter is a new digital readout power meter from Sipap Electronics, Inc., which serves as a preventive maintenance device designed to record the true running time of any gasoline engine.

MITE.

"Periodic preventative maintenance is not generally thought of," says Herb Ley, president and founder of Sipap. "Before our meter was developed, there was no readily available way for people to know when service was required. This product helps users better maintain

their equipment and also promotes dealer service."

The 2-oz. meter attaches to any flat surface with double stick tape. A wire extending from the unit wraps around a spark plug wire to form a conductive pickup which turns the meter on and off.

The meter, however, does not run off the engine. An internal, high-capacity lithium battery powers the meter, which records up to 5,000 running hours of any two- or four-cycle single- or multi-cylinder gasoline engine.

Circle No. 222 on Reader Inquiry Card

Bark renewer concentrate restores and revitalizes

Standard Tar Products Co., Inc. of Milwaukee has introduced Bark Renewer concentrate to compliment their ready-to-use brand.

Bark Renewer revitalizes decorative wood chips and bark, and is designed to restore vibrant like-new colors and prevent color loss and graying due to exposure from sunlight, wind and rain.

Moisture Guard barriers keep water from soaking into the chips or bark and causing rot.

Bark Renewer is available in the ready-to-use form or concentrate. Three colors are available: honey, California redwood and walnut brown.

Available in one gallon, five gallon or 55 gallon containers.

Circle No. 223 on Reader Inquiry Card

Walk-along trencher has hydrostatic ground drive

Ditch Witch has introduced the Model 1620, a 16-hp walk-along trencher that features a hydrostatic ground drive and mechanical digging chain drive system.

The Company says the 1620 digs to

depths of four feet, at widths from 3¼ to 12 inches with optional pivot.

Its power and trenching depth capability make the 1620 ideally suited

continued on page 100

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Circle No. 133 on Reader Inquiry Card

PRODUCTS *from page 99*

for utility line installation and repair.

Controls for the 1620 are color-coded to match the color-coded instruction/operation decals at the operator's station. All controls are grouped together within easy reach of the operator.

According to the manufacturer, advanced-design construction and components enable the 1620 to be operated with very little daily servicing, and also make it an exceptionally reliable trencher.

The 1620's drive wheels can be steered while trenching, allowing maneuverability when trenching around obstructions.

A Ditch Witch rotational horizontal boring unit can be mounted on the unit for added versatility.

Circle No. 224 on Reader Inquiry Card

Tree spade features eight field adjustable blades

A Stocker 85-inch low profile tree spade offers special advantages for use when digging, transporting and transplanting large diameter trees, according to Treespades America, Inc. of Minneapolis.

The spade has eight narrow blades to produce a solid, undisturbed root ball assuring maximum tree survivability. Each blade can be adjusted in minutes on-site to maintain tight blade alignment, preventing loss of soil and/or gravel from the spade during transport.

The spade also digs a perfectly round hole, eliminating the need to align the spade to match the contour of the receiving hole when planting.

Each blade is powered by a patented gear rack drive, eliminating the need for hydraulic towers above the spade module. Treespades America says this allows transplanting trees close to buildings, walls and other structures.

It digs a half-round root ball, 54-inches deep, which can be rotated in receiving holes to quickly plant trees plumb, especially on slopes and berms. A twin piston side tilt device eliminates outriggers.

Circle No. 225 on Reader Inquiry Card

Grids control erosion, keep paths protected

The Grid System from Chempath, Inc. of Oostburg, WI, is an easy-to-install, interlocking protective surface to control erosion or maintain the beauty of cart paths or other highly used areas.

Grass grows through the Grid System, crowns and rhizomes are protected, and there is no interference with rhizome or stolon growth. Pieces are 2 x 2½ feet in size, and easily cut to fit around sprinkler heads and sidewalks.

Chempath says the grids have many applications for the landscape industry, including use for trellises, terracing, sidewalks and paths to secure plantings.

Circle No. 226 on Reader Inquiry Card

Lightweight fairway mower causes less compaction

The Jacobsen LF-100 cuts a 100-inch swath at a 6-mph maximum speed.

Its 22″ hydraulically-powered reels and a positive down pressure system mean a beautiful finish to turf, with less than 10-psi for less compaction.

Jacobsen says the LF-100 is designed for low maintenance and easy service. Its powerful, fuel efficient diesel engine has a proven record of durability and dependability. Quieter, too, thanks to a new muffler and larger air cleaner.

The LF-100 is available in a 2- or 4-wheel drive, and is the only fairway mower available with Jacobsen's Turf Groomer Fairway conditioner for healthier, stronger turf.

Circle No. 227 on Reader Inquiry Card

Top-ranked rye now available in blend

Garfield Williamson, Inc. reports that Saturn, ranked number one in the USDA's National Perennial Ryegrass Test is now being blended into its popular Proform Triple Classic Turf Rye Blend.

Garfield Williamson reports that Saturn is noted for its seedling vigor, genetic color, winter color and resistance to diseases such as blotch and brown patch.

Saturn is described as a very fine-leaved, low-growing variety which tolerates mowing as close as ⅜-inch.

Triple Classic Turf Rye is a result of three top-ranked premium varieties: Saturn, Omega II and Manhattan II or Competitor perennial ryegrass.

Triple Classic Turf Rye was developed exclusively by Proform research.

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by Shurtleff, Fermanian, Randell
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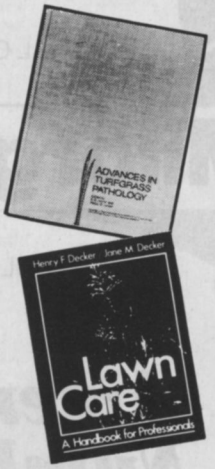
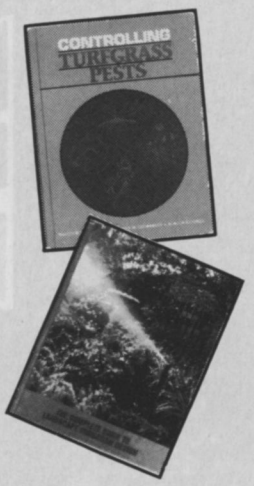
230 - LAWNS-Third Edition
by Dr. Jonas Vengris and Dr. William A. Torello
Designed as a textbook or a practical usage manual, this book has been completely brought up-to-date. Care of lawns and turfgrass, from selection of varieties to maintenance of established grass is completely covered. **$27.95**





235 - LAWN CARE: A HANDBOOK FOR PROFESSIONALS
by H. Decker, J. Decker
Written by turfgrass professionals, this handy guide will be invaluable for playing field managers, golf course managers, or any lawn care practitioner. Covers all aspects of turfgrass management. **$46.00**

640 - TURF IRRIGATION MANUAL
by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems. Golf course design systems and expanded engineering and reference material. **$28.50**

615 - TURF MANAGEMENT FOR GOLF COURSES
by James Beard
Written by an eminent turfgrass researcher, this USGA sponsored text is an ideal reference and "how to" guide. Details all phases of golf course design and construction, turf management, course administration, irrigation, equipment and disease and pest control. Fully illustrated. **$52.75**

620 - TURF MANAGEMENT HANDBOOK
by Howard Sprague
Practical guide to turf care under both healthy and poor turf conditions. Chapters cover turf in cooler and warmer regions, fertilizer use, regular turf care, weed and disease control and special turf problems. Useful seasonal schedules for management of turf areas. **$26.60**

630 - TURFGRASS: SCIENCE AND CULTURE
by James Beard
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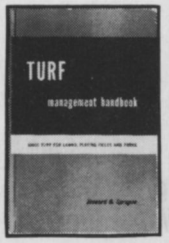

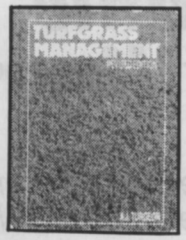

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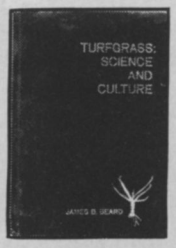

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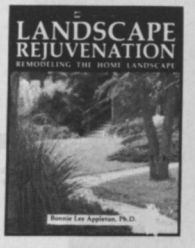

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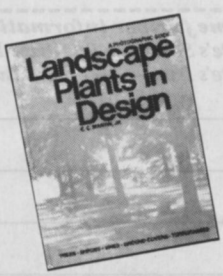

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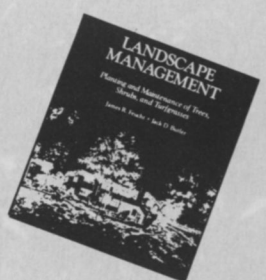

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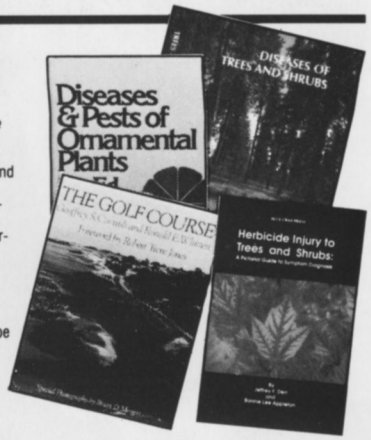

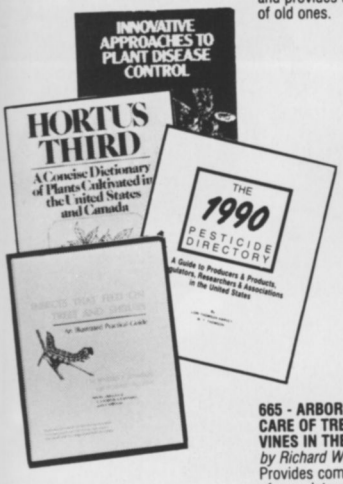
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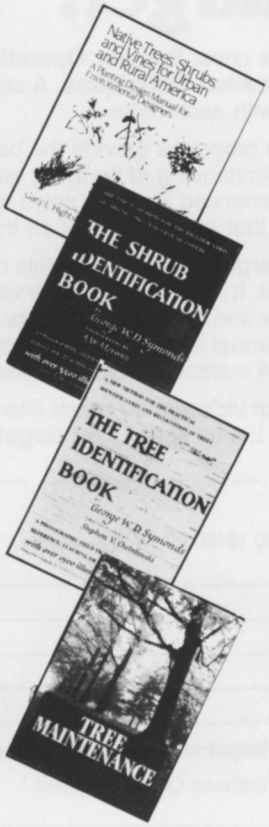
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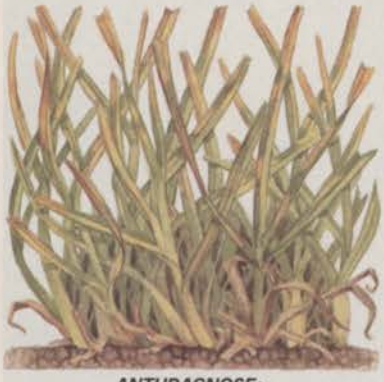

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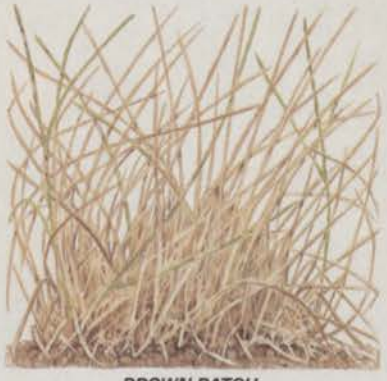

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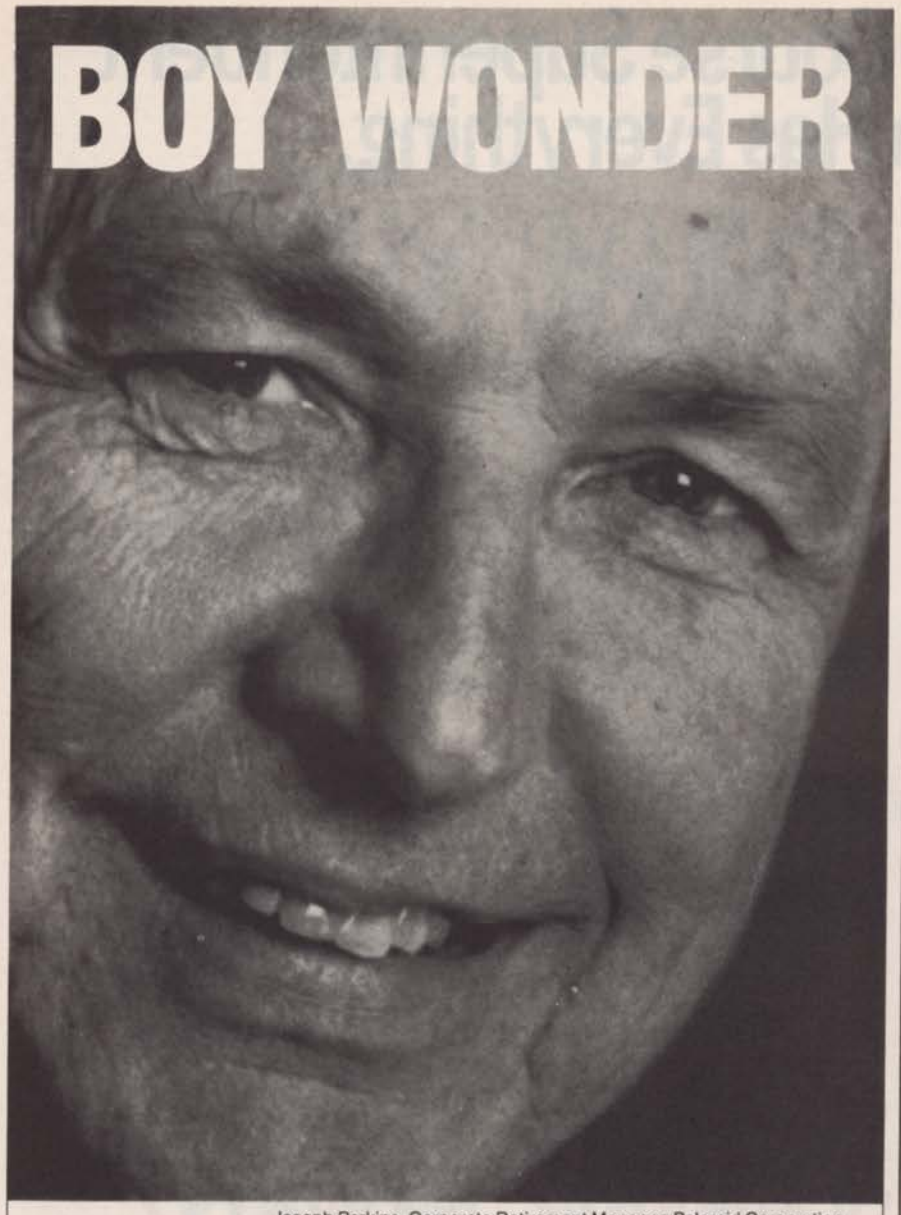

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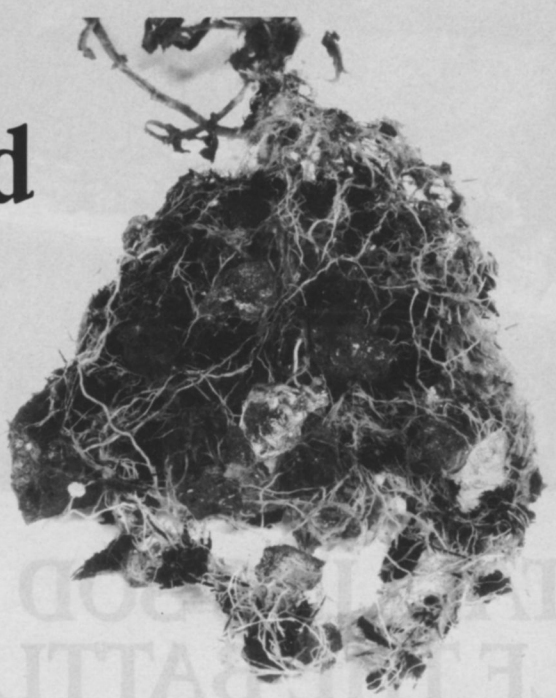

When we introduced SUPERSORB® water absorbants a few years ago we were confident that they would be successful, but we had no idea that this practical and versatile water management tool would generate so much enthusiasm among landscape professionals.

We,ve compiled some of the most frequently asked questions and answers. If your questions aren't answered here, give us a call toll-free at the number below.

Q: What is SUPERSORB and what does it do?

A: SUPERSORB is a water absorbant. It consists of acrylic copolymer crystals which absorb water to increase the moisture holding capacity of soil. SUPERSORB crystals can absorb up to 200 times their weight in water and release nearly 100 percent of their reserves as the soil dries out or plants require it. SUPERSORB keeps on working for at least two years. It is non-toxic to plants, people and animals, and is eventually metabolized by soil microorganisms.

Q: What will SUPERSORB do for me in landscape installation and maintenance?

A: SUPERSORB C lets you and your customers extend the time between waterings. It helps trees, shrubs, bedding and container plants and ground covers survive moisture stress conditions. SUPERSORB F can be used as a rootdip for bareroot plants, added to hydroseeding mixtures or used to speed the establishment of sod. So SUPERSORB saves you time and water and gives you better plant establishment.

Q: What's the difference between SUPERSORB and other water absorbants on the market?

A: Aside from SUPERSORB's unique blue color, which is helpful when mixing it into the soil, you'll find that SUPERSORB's particle size is more uniform for more predictable performance. In addition, SUPERSORB is backed by AQUATROLS' customer service and 35 years of experience.

Q: Which particle size, Coarse or Fine should I use?

A: We recommend SUPERSORB C, Coarse Particle (1-2mm) for transplanting trees and shrubs, amending the soil in beds, containers and hanging baskets. SUPERSORB F, Fine Particle (<.5mm) is used for hydroseeding, installing sod, seeding and for root dipping bareroot stock.

Q: Will SUPERSORB waterlog the soil or take water away from plant roots?

A: No to both questions. SUPERSORB expands into discrete chunks; it doesn't form a soggy mass. As SUPERSORB expands and contracts it actually helps keep the soil or container mixes open and loose. Since water must be in a free state for SUPERSORB to absorb it, water clinging to soil particles or within plant root tissues cannot be absorbed by the crystals.

Q: How much does SUPERSORB cost to use?

A: It costs about $.50 to amend the backfill for a tree or shrub with a one foot in diameter rootball.

Q: Where can I buy SUPERSORB?

A: From the turf and hort supply distributors throughout North America. If your distributor doesn't stock SUPERSORB, accept no substitutes. Call us toll free and we'll give you the name of the nearest SUPERSORB distributor.

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July

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Circle No. 125 on Reader Inquiry Card

PROBLEM MANAGEMENT

by **Balakrishna Rao**, Ph.D.

Preventing winter rabbit damage

Problem: *We get a number of calls from our customers to protect ornamental plants from rabbit feeding injury during winter. What do you recommend for managing rabbits in the landscape? (Ohio)*

Solution: Rabbits can cause extensive damage to ornamental and fruit trees when their source of food becomes scarce in the winter months. Generally, they prefer tender new growth to feed, but during winter months they feed on bark and may girdle the plants. The loss of bark, depending on the extent of the injury, can result in the death of the tree, or may result in poor vitality and increased susceptibility to diseases.

Repellents are possibly the best means of preventing rabbit damage. Repellents applied to plants on a warm day in the fall will protect the trees all winter. In many situations, one application is sufficient, though two applications provides additional protection.

Repellents should be applied to the trunk and/or low-growing branches within the reach of rabbits when snow accumulates. A number of commercial formulations are available in the market. Some can be sprayed while others need to be painted on with a brush.

Other methods recommended in the literature are shooting, trapping, protective covers around trees and installing fences around areas to be protected from rabbits. These methods would be preferred in areas where chemical control is not practical.

Getting control of barnyardgrass

Problem: *I run a small business that has a big problem with water grass. It seems to be taking over more and more of our properties. The controls I've been using seem to slowly dispose of the other weeds but not the water grass. Please help! (Missouri)*

Solution: The water grass you are referring to is probably barnyardgrass (*Echinochlora crusqualli*), which is also known as Panic-grass, Cockspur-grass, and Cocks-foot.

Barnyardgrass is a common annual weed with a coarse growing habit. Plants are erect or reclining with clumps two to four feet wide and blades 1/2 inch or more wide and one foot or more in length. They produce heavy, coarse panicles, usually purplish in color.

Barnyardgrass is a monocot that requires a pre-emergence material for control. Try Betasan, Dacthal, or Pre-M. These products will help you manage the water grass plants as they emerge from the seed. Like crabgrass management, early spring treatment is recommended to manage water grass.

Remember that a few weeds may germinate after the residual effect of the first pre-emergence herbicide treatment is gone. If the problem is severe, consider treating with post-emergence annual grass management products like Acclaim, Daconate 6, Prograss, DSMA, or MSMA when the plants are very young.

In some situations, you may not be able to kill the plant. However, the treatment may stress the plant and inhibit seed production for future infestation.

Homemade mealy bug remedies

Problem: *Can a home plant grower mix up his own concoction for mealybugs and spider mites? What chemicals or household products are involved in such a spray remedy? (Wisconsin)*

Solution: I am not familiar with any articles published in professional journals about "home concoctions" and their effect on mealy bugs or spider mites. However, some people may be trying different household products and may have found variable results.

You may find some information concerning hommade concoctions in consumer publications by Jerry Baker, who talks about that type of pest management approach. His books are available in the garden departments of retail stores.

For mealybugs, I would recommend that you use horticultural oil as a dormant treatment in the spring. Later on use chemicals such as malathion, Orthene, Sevin, or insecticidal soap when overwintering nymphs become active in mid-May, June 1 and/or in late July as needed. **LM**

Balakrishna Rao is Director of Lawn Care Technical Resources for The Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Management, Landscape Management, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

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